

Case No.

249

Application, Transcript,
Small Exhibits, Etc.

(Consolidated in History of Case 315)

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NO.

NAME

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BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

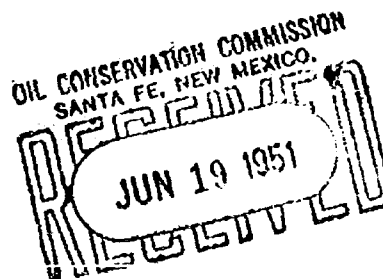
IN THE MATTER OF THE APPLICATION
OF AMERADA PETROLEUM CORPORATION
FOR AN ORDER ESTABLISHING PRORATION
UNITS AND UNIFORM SPACING OF WELLS
FOR THE BAGLEY-SILURO-DEVONIAN
POOL, LEA COUNTY, NEW MEXICO

CASE NO. 249

APPLICATION FOR MODIFICATION OF ORDER NO. R-69

Comes now Amerada Petroleum Corporation, and alleges
and states:

1. That on May 1, 1951, the Oil Conservation Commission entered its Order No. R-69 establishing 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, and requiring that all wells drilled into said pool be located in the center of the Northwest and the Southeast Quarters of each Governmental Quarter Section, as more particularly set forth in said order, reference to which is here made.
2. That by said order there was established an 80-acre proration unit comprising the E/2 NE/4 of Section 3, T-12-S, R-33-E, Lea County, New Mexico.
3. That Applicant has drilled and completed a producing oil well located in the center of SE/4 NE/4 Section 3-12S-33E, known as Mathers No. 1 Well which, under Order No. R-69, is the authorized well for the proration unit comprising the E/2 NE/4 of Section 3-12S-33E.
4. That, subject to the oil and gas leases of Applicant, the United States Government owns all royalty interest in NE/4 NE/4 of Section 3-12S-33E, and W. E. Mathers owns all royalty interest in SE/4 NE/4 Section 3-12S-33E, and both the United States Government and W. E. Mathers have expressed their objection to the forced pooling of said separately owned tracts comprising said



proration unit authorized by Sec. 69-213 $\frac{1}{2}$ (c) of 1949 Cumulative Pocket Supplement to 1941 New Mexico Statutes Annotated.

5. That, subject to the oil and gas lease of Applicant, W. E. Mathers owns all royalty or mineral interest in the NE/4 SE/4 Section 3-12S-33E.

6. That Applicant desires to drill a well projected to the Siluro-Devonian formation to be located in the center of NE/4 NE/4 Section 3-12S-33E.

7. That inasmuch as the Mathers No. 1 Well located in the center of SE/4 NE/4 Section 3-12S-33E would be the authorized well for the 80-acre proration unit herein requested and the proposed well to be located in the NE/4 NE/4 Section 3-12S-33E would be drilled on a fractional unit of 40 acres and would not be an exception to an authorized undrilled location for an 80-acre proration unit, therefore the Commission should determine the allowable for said fractional unit so as to maintain equity and protect the correlative rights of all royalty owners and lessees and modify its previous Order No. R-69 as may be necessary to accomplish this purpose.

8. That in order to prevent waste and protect the correlative rights of all lessees and royalty owners in the Bagley-Siluro-Devonian Pool, Order No. R-69 should be modified so as to establish the SE/4 NE/4 and the NE/4 SE/4 Section 3, 12S-33E as one 80-acre proration unit, and to permit Applicant to drill a well into said pool, to be located in the center of NE/4 NE/4 Section 3-12S-33E and to determine the allowable for the fractional unit of 40 acres upon which said proposed well would be located.

WHEREFORE, Applicant respectfully requests that the Commission set this application for hearing and that due and proper notice be given as required by law and that at the conclusion of said hearing the Commission enter its order modifying Order No. R-69 entered May 1, 1951, in the following particulars; to wit:

1. That SE/4 NE/4 and NE/4 SE/4 Section 3-12S-33E,
be established as a single 80-acre proration unit;
2. That Applicant be authorized to drill a well to
the Bagley-Siluro-Devonian Pool, to be located in
the center of NE/4 NE/4 Section 12S-33E;
3. That an allowable should be determined which
will maintain equity and protect the correla-
tive rights of all parties;

and for such further relief to which Applicant may be entitled.

Dated this 15th day of June, 1951.

HERVEY, DOW & HINKLE

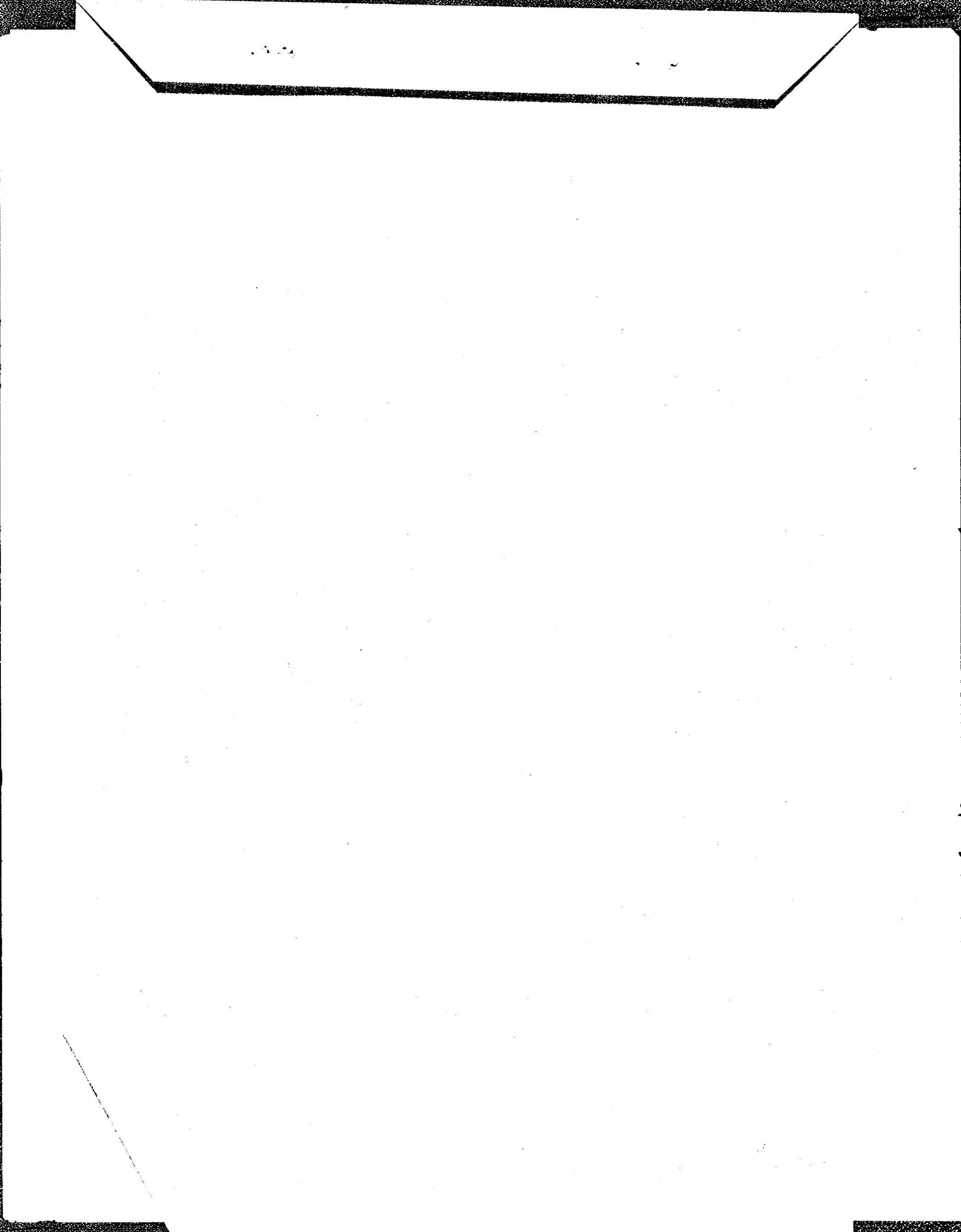
By *James Hinkle*

HARRY D. PAGE AND BOOTH KELLOUGH

By *Booth Kellough*

Attorneys for

AMERADA PETROLEUM CORPORATION



NO.

NAME

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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:

CASES 249 AND 315
(Consolidated)
ORDER No. R-69-A

THE MATTER OF THE APPLICATION OF
AMERADA PETROLEUM CORPORATION
FOR AN ORDER ESTABLISHING PRORATION
UNITS AND UNIFORM SPACING OF WELLS
FOR THE BAGLEY-SILURO-DEVONIAN POOL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at Santa Fe, New Mexico, on April 24, 1951 and again on April 15, 1952, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 29th day of April 1952, the Commission, a quorum being present, having considered the testimony adduced and the exhibits received at said hearings, and being fully advised in the premises,

FINDS:

(1) That due public notice has been given as required by law, and the Commission has jurisdiction of this cause and all the matters and things relating thereto.

(2) That heretofore, the Commission, by virtue of Order No. R-69, to which reference is hereby made, established 80-acre proration units, establishing a spacing pattern, provided for an allowable equal to one and one-half times the top allowable for a 40-acre proration unit (with deep-pool adaptation), and provided for an exception to the 80-acre drilling pattern with adjustment of allowables.

(3) That Order No. R-69, effective May 1, 1951, was a Temporary Order, established for a period of one year.

(4) That geological and engineering data now available to the Commission indicates that one well apparently will drain 80 acres, and the Bagley-Siluro-Devonian pool should be developed on 80-acre proration units for a further period of one year.

(5) That information presented to the Commission indicates that the adoption of secondary-recovery methods at present is not necessary.

(6) That the operators in the Bagley-Siluro-Devonian pool should present to the Commission a monthly report showing complete production and reservoir information.

(7) That Order No. R-69 should be extended for a period of one year upon the conditions and limitations herein set forth.

IT IS THEREFORE ORDERED:

(1) That Order No. R-69, be, and it hereby is extended for a period of one year from the first day of May 1952, upon the following terms and conditions, to-wit:

(a) That each operator in the Bagley-Siluro-Devonian pool shall file with the Commission office at Santa Fe, New Mexico, on or before the 15th day of each and every month, a monthly tabulated report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production. This requirement is in addition to and supplementary to the other reports and surveys presently required by the Commission, and is not in substitution or in lieu thereof.

(b) That said operators shall cause a pool-wide bottom-hole pressure survey to be taken during the months of July 1952, November 1952, and March 1953, and the results thereof reflecting such pressures of each well shall be submitted in writing to the Commission on or before the fifth day of the following month. (Bottom-hole pressure tests shall be taken as prescribed by Rule 302 of the Commission's Rules and Regulations.)

(c) At the regular Commission hearing for the month of April in 1953, the operators shall show cause why said pool shall not be placed on a 40-acre spacing pattern with allowable adjustment.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman

GUY SHEPARD, Member


R. R. SPURRIER, Secretary

Class 249-4: Anisada Petroleum Corp. for es-
tablishment of production units & uniform
spacing Beley-Siluro-Devonian (Ira County)

BEFORE THE
OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO

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TRANSCRIPTION OF HEARING

CASE NO. 249-A

24 July 1951  
(DATE)

Original

E. E. GREESON  
COURT REPORTER  
UNITED STATES COURT HOUSE  
TELEPHONE 2-0872  
ALBUQUERQUE, NEW MEXICO



BEFORE THE  
OIL CONSERVATION COMMISSION  
July 24, 1951

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CASE NO. 249A: This concerns Amerada Petroleum Corporation's application for an order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, Lea County, New Mexico

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MR. HINKLE: Members of the Commission, Mr. Booth Kellough of Tulsa and myself, Clarence E. Hinkle of Hervey, Dow and Hinkle of Roswell, are appearing on behalf of Amerada Petroleum Corporation. The Amerada Petroleum Corporation had a hearing before the Commission on April 24, 1951, which was on the application of Amerada to establish proration units and uniform spacing of wells in the Bagley-Siluro-Devonian pool in Lea County. After this hearing was held an order was entered by the Commission on May 1, 1951, establishing 80 acre units for the Bagley-Siluro-Devonian pool in Lea County.

I shall put before you plats which show the 80 acre units which were established by that order, including the exceptions which were made in the order and which are shown by the dotted lines. The matter which is before you this morning is upon the application of the Amerada to modify the order which was entered on May 1, being Order No. L-69. Under the order of May 1st, the east half and the west half of each 160 acre legal subdivision, with certain exceptions,

were designated as a unit. That would mean that the east half of the northeast as one unit, of Section 3 as one unit, and the east half of the southeast quarter of Section 3 another. Since the order of May 1st on the hearing that was held, the Amerada has drilled a well in the SE $\frac{1}{4}$  of the SE $\frac{1}{4}$  of Section 3, which wasn't drilled down<sup>to</sup> the Siluro-Devonian formation. However, the information obtained in the drilling of that well would indicate that it is probably on the edge of the field, and it may not prove productive in the Siluro-Devonian formation. They have also completed a well in the SE $\frac{1}{4}$  of the NE $\frac{1}{4}$  which was completed as a producing well in the Bagley--in the Siluro-Devonian formation.

Now that would be on the unit that would have composed the E $\frac{1}{2}$  of the NE $\frac{1}{4}$  of Section 3. The well which I have just referred to is on patented land and the minerals are owned, subject to the lease of the Amerada, by Mr. Nathers. The NE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 3, which is the other 40 acres, which would normally constitute that 80 acre unit, is owned by the United States subject to the lease, of course of the Amerada.

The government and Mr. Nathers have both indicated to the Amerada that they would not be willing to enter into a pooling agreement or arrangement whereby the well which has been drilled in the SE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 3 would constitute a well of that particular unit, 80 acre unit.

And, furthermore, there may be some legal obstacle in the way of pooling a Federal--in the way of pooling Federal land and privately owned land. It has never been tested out. Now, due to the fact that the well that was drilled in the SE SE of Section 3 down to and including the Pennsylvanian, the information obtained doesn't look too promising as far as producing in the lower formation is concerned and due to the fact it doesn't look like it is going to be possible or feasible to pool the SE $\frac{1}{4}$  of the NE $\frac{1}{4}$  with the NE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 3, the application of the Amerada proposes that an exception be made to the order of May 1st, 1951, in that 40 acre unit of Federal acreage constituting the NE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 3 would be treated as a separate unit because it is an isolated tract. And that the SE $\frac{1}{4}$  of the NE $\frac{1}{4}$  and the NE $\frac{1}{4}$  of the SE $\frac{1}{4}$  of Section 3 constitute the 80 acre unit rather than the E $\frac{1}{2}$  of the SE $\frac{1}{4}$  of Section 3.

Now, that proposed new 80 acre unit is shown by the cross-hatch from NW to SE on the plats that are before you. And the 40 acres of the Government is shown by the other 40 that is cross-hatched just above it. The application also provides that in the event the Commission sees fit to designate this as a new unit, that the allowable, as provided by the order of May 1, 1951, should be modified. Now, the order of May 1st in Section 2 provides this: "That all wells drilled into the Bagley-Siluro-Devonian pool shall be located in the center of the NW $\frac{1}{4}$  of the SE $\frac{1}{4}$  of each Governmental quarter-section, with a tolerance of 150 feet in any direction to avoid surface obstruction."

Paragraph 4 of the order fixes the allowable for each 80 acre unit as one and one half times the regular 40 acre allowable. Now, Section 5 provides this: "If any well is drilled as an exception to the well spacing pattern set forth above under such order of the Commission, the allowable for such well shall be the top allowable for a 40 acre proration unit with the deep pool adaptation as provided by the Rules and Regulations of the Commission."

Now, whether the language is apt or not, the proponents of the 80 acre spacing intended in Section 5, which I have just read, to mean an exception not to the regular 80 acre unit but an exception to the well being located in the center of the 40 as provided in Section 2 of the order, which provides that each well shall be located approximately in the center of each 40 acres.

For instance, to illustrate that, if it proved that the NW $\frac{1}{4}$  of the NE $\frac{1}{4}$  of that unit there, that would be the N $\frac{1}{2}$  of the NE $\frac{1}{4}$  of Section 11, should prove to be on the edge of the pool and the Texas Pacific, who is the lease owner, wanted to locate a well set 330 feet from the north and west boundary rather than in the center of the 40, then it is our contention that this order means that in that event if the Commission allowed the unorthodox location, it would be entitled to a 40 acre allowable. Now, as I say, the language may not be apt, but that was really the intention of the order so far as the parties were concerned. As to what the Commission

intended, I am not able to state. We believe that since the whole proration set up in this area is based on an acreage basis, that it would not be equitable in the event the Commission permits the Government acreage, this isolated 40, to be an exception and to permit a well to be drilled on there, to allow the full 40 acre for that unit, while the other 80 acre units would be given only a one and a half allowable. That is on the rest of the 80 acre units.

Because of that and because it would not be on an acreage basis, we believe if the exception is made in this case that the allowable as to the 40 acre exception should be reduced by half of the regular one and a half allowable, which would still keep it on an acreage basis, which our proration units have always been in the state.

Now, if the Commission is not willing to reduce that unit to a 40 acre allowable in order to do equity to all of the other owners, we believe that the--that all of the 80 acre units--should be raised to double the allowable so it will still keep it on an equitable basis. In fact, I think that we would want to insist that if they did, you would see fit to give that 40 acres the regular 40 acre allowable, that all of the rest of the 80 acre units be placed upon a double allowable basis.

Now, with that preliminary statement, Mr. Kellough will proceed to introduce the evidence in support of the application.

JOHN VEEDER,

having been first duly sworn, testified as follows;

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Will you please state your name?

A John Veeder.

Q Where do you live, Mr. Veeder?

A Midland Texas.

Q By whom are you employed?

A Amerada Petroleum.

Q And in what capacity?

A District Geologist.

Q Have you previously testified before this Commission in your capacity as a geologist or as an expert witness?

A Yes.

MR. KELLOUGH: Are the qualifications of this witness acceptable?

MR. SHEPARD: They are acceptable.

Q Mr. Veeder, I hand you what has been marked as Exhibit 1 and ask you to state what that shows.

A This is a map of the Bagley field showing the Devonian and Pennsylvanian producers. The Devonian wells are marked by large circles and the Pennsylvanian by small circles.

Q Now, the red line represents the productive limits of the pool as heretofore ordered by the Commission, is that right?

A Yes, that is the productive limits as submitted at the last hearing.

Q And on this map there appear a number of dotted lines representing units. Will you explain what those are?

A The dotted lines are on the 80 acre tracts which have been exceptions to the standard 80 acre tracts, which are the  $E\frac{1}{2}$  and the  $W\frac{1}{2}$  of each quarter section.

Q In other words, all other units comprising the east half and the west half are not specifically set out on this map?

A That's right.

Q This map shows by dotted lines the exceptions already granted?

A That's right.

Q Except for the hatched line area in the center? Now referring to the NE of section 3 and the SE, there appear a 40 acre tract adjoined on the south by an 80 acre tract in dotted lines and in hatched lines. What does that represent?

A The 40 acre tract, which is the NE NE of Section 3, is the Federally-owned tract and is the unit which we would like to have presented as an exception.

Q In other words, by the hatched line we have shown the exception we are asking for in this hearing?

A That's right.

Q Now, since the last hearing, Mr. Veeder, how many wells in the whole field have been completed?

A Since the last hearing there actually has been no further Devonian producers completed. However, the Amerada State BTK located in the SE SW of Section 34 was taken to the Devonian

at a total depth of 11,060 feet and found non-productive and was plugged back and completed as a Pennsylvanian well. The No. 2 Nathers in the SE SE of Section 3 was completed as a Pennsylvanian well, and this well structurally was 39 feet lower than the No. 1 Nathers on top of the Pennsylvanian.

Q Now, the No. 2 Nathers down in the SE SE of 3, wasn't taken clear down to the Devonian?

A That's right. The No. 2 Chambers, which was drilled on the NE NW of Section 11, that well was completed as a Pennsylvanian producer. And a further well, No. 3 Caudle located NE NE Section 10 was completed as a Pennsylvanian producer. One further well, the Amerada No. 1 Turner, located in the SE SW of Section 11 was carried to the Devonian and found non-productive in Devonian and Pennsylvanian.

Q In that last well you speak of, it was outside the productive limits as shown by this red line on this map?

A That's right.

Q Mr. Veeder, have you prepared a structure map?

A Yes, I have.

MR. KELLOUGH: First, we offer in evidence Exhibit 1.

Q I hand you what has been marked as Exhibit 2 and ask you to state what that is?

A This is a structure map drawn on top of the Devonian pay contour interval in the Bagley field.

Q That map was prepared by you or under your direction and control?



A That's right.

Q Referring to this structure map, Mr. Veeder, will you point out which contour line represents the probable productive limits of the Devonian pay section?

A We take the water-oil contact at Bagley at a minus 6745. That would conform roughly with a minus 6750 contour which would represent the productive limits of the Devonian.

Q For the purpose of identification, will you take your pencil and hatch that contour in the area of the land involved here in this application?

(Witness complies with the request.)

Q Referring to the structure map, what is your opinion as to whether the Nathers No. 2 well located in the SE SE Section 3 would be productive in commercial quantities in the Devonian?

A I would seriously doubt if the Nathers No. 2 would make a commercial Devonian producer.

Q Is that the reason why it wasn't taken down?

A That's right.

Q What is your opinion as to whether the well drilled in the 40 acres to the north of the tract on which Nathers 2 is located, or in other words, the NE SE of 3, whether a well drilled on that 40 acres would be productive in the Devonian?

A That would make a commercial Devonian producer.

Q Now, all that is based upon information that you have at this time?

A That's right.

Q Referring to the structure map again, what would you say as to the relative structural positions of the NE NE of 3 and the SE NE of 3?

A The structural position of those two quarter sections, of the two 40 acre pieces, are relatively the same structurally.

MR. KELOUGH: We offer in evidence Exhibit 2. And we have no further questions of this witness.

MR. SHEPARD: Does anyone else have any questions?

By MR. CAMPBELL:

MR. CAMPBELL: Mr. Commissioner, I would like to ask a couple of questions. My name is Jack M. Campbell of Atwood, Malone and Campbell of Roswell, representing the Gulf Oil Corporation.

Q Mr. Veeder, are you acquainted with the ownership of the 40 acres situated immediately north, the lease ownership, of the proposed exception?

A That is owned by Gulf I understand.

Q That is part of a state lease?

A That's right.

Q One other question. According to your interpretation of the contour on your Exhibit 2, it would appear that the NW $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 3, is only partially within the structure, is that correct?

A That is the NW of the NE of Section 3?

Q Yes, sir.

A That's right. That would be definitely, well, it would be a flank well.

MR. CAMPBELL: That is all.

MR. SHEPARD: Any further questions? Do you have anything more?

MR. KELLOUGH: Not of this witness.

MR. SHEPARD: He may be excused.

(Witness excused.)

R. S. CHRISTIE,  
having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Will you state your name please?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Fort Worth, Texas.

Q By whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity?

A Petroleum Engineer.

Q Have you previously testified before this Commission?

A Yes, sir.

Q In your capacity as Petroleum Engineer and Expert witness?

A Yes, sir.

MR. KELLOUGH: Are the qualifications of the witness accepted?

MR. SHEPARD: They are accepted.

Q Mr. Christie, do you know<sup>of</sup>/any additional data from a reservoir engineering point of view which has been developed prior to the last hearing which is relevant or pertinent to this application?

A No, sir, I do not.

Q What is your opinion or recommendation as to the allowable which should be ordered in the event this application is granted and an exception were permitted?

A It is my opinion if the allowable on the 40 acre exception should be granted one half the allowable given to the wells on the 80 acre units.

Q In other words, if the allowable for the field stays at one and a half times it is your opinion that to maintain equity the allowable and the Government 40 should be one-half of that?

A Yes, sir.

Q Or is it your opinion that if the Commission decides that they should give the Government 40 a full 40 acre allowable then the allowable for the field as a whole should be doubled?

A That is correct. The allowable for the 80 acre wells should have double the allowable for the well on the 40.

Q What is to maintain equity?

A Yes, sir.

Q Is it your opinion that it would be inequitable and disturb the correlative rights to permit the Government 40 to have the full allowable while the rest of the 80 acre

units had only one half?

A Yes, I believe it would.

Q Other wells in the field now are making one and a half?

A Yes, they are.

Q In your opinion will the wells make double?

A I believe now at the present time that all the wells completed in the Siluro-Devonian will make double the 40 acre allowable.

Q Now, will that be for a temporary period or what opinion do you have with reference to that?

A That is rather difficult to say. Based on the potentials that were taken on the wells and based on the performance of the reservoir to date, it appears as though they will make the allowable for sometime. How long that will be is pretty hard to determine.

Q That is problematical.

A Yes, sir.

Q But in the meantime, everybody will be on the same basis?

A Yes, sir.

Q Is it your opinion and recommendation that if a change in the allowable is made under either view which you expressed, that it should be as of the day of the completion of the well which Amerada proposes to drill on the NE NE of 3?

A Yes, sir. I see no reason for making a change until that time. The present allowable of one and a half times a 40 acre allowable with the deep pool adaptation went into effect the first of May; so that we have only a little less

than three months history under that allowable. It will take several months to drill a new well, which will give us additional time to study the reservoir under present producing conditions. For that reason, I think it would be wise to wait until that time.

Q Then would you see any necessity for changing the allowable at all until the exception well, if it is granted, is completed?

A No, sir.

Q Then it is your understanding that Amerada does desire to drill in the NE NE of 3 as an exception?

A That is my understanding, yes, sir.

Q And that you asked the Commission that an 80 acre unit be created comprising the SE NE and the NE SE of 3?

A Yes, sir.

Q The well for that 80 acre unit would be the Nathers No. 1 well?

A That is correct, yes, sir.

Q Now, is it your opinion and recommendation that to maintain equity that well, being the well for the 80 acre unit, should be given the full 80 acre allowable?

A Yes, sir, I think it should.

Q Whatever it is determined to be by the Commission?

A Yes, sir.

Q Is it your opinion that the Nathers No. 1 well located in the SE NE of 3 will drain a sufficient area of 80 acres so

as to give him his fair share of the oil in the reservoir?

A In my opinion it will, yes, sir.

Q Do you know any reason why anyone would be prejudiced by this exception and modification of this order which is being requested?

A No, sir.

MR. KELLOUGH: That is all the questions I have of this witness.

MR. SHEPARD: Any questions?

MR. MORRELL: I would like to ask Mr. Veeder a question.

MR. SHEPARD: Go ahead.

MR. MORRELL: For the purpose of the record and to review, will you give us the top of the Devonian-Siluro

formation for the deep well adaptation for allowable purposes?

A I don't have that handy. I can get it for you.

MR. MORRELL: It is between ten and eleven thousand, is that correct?

A I believe that's right.

MR. KELLOUGH: Mr. Veeder, Our geologist may have that information.

MR. VEEDER: Which particular well?

MR. MORRELL: Just for the pool allowable. Is it based on the depth of between ten and eleven thousand feet?

MR. VEEDER: That's right.

MR. MORRELL: The Pennsylvanian well in the same

area is based on a depth of between nine and ten thousand feet.

MR. VEEDER: That is right.

MR. MORRELL: That is all.

MR. SHEPARD: Any other questions? If there are no further questions, you will be excused, Mr. Christie.

(Witness excused.)

MR. CAMPBELL: If the Commission please, I would like to make a correction on the question I asked. I think his answer will be the same. I described the tract as the NE NW of the NE of Section 3. I meant to refer to the SW of the SE of Section 34. Would your answer be the same, that that apparently is on the edge of the structure?

MR. VEEDER: That is the SW of the SE?

MR. CAMPBELL: SW of SE of Section 34. Your contour line moves out to the west there doesn't it?

MR. VEEDER: You would interpret that tract to be structurally lower than the top of the Devonian pay?

MR. CAMPBELL: But apparently your contour would cover that entire 40 as productive.

MR. VEEDER: Yes, sir.

MR. SHEPARD: Any other questions? If not, then you will be excused.

MR. KELLOUGH: We have no other witnesses but I would like to briefly, very briefly, summarize our position which is simply this. That in the opinion of our geologists the



SE SE of Section 3 down here is very probably non-productive. The 40 to the north of it very probably is productive which means that an exception well would have to very likely be drilled somewhere, either in that 40 or on the Government 40. Now, the only way that we can avoid the objection of both royalty owners, the Government and Mr. Nathers, and also avoid the legal question which was raised as to the state's authority to pool government land, is by the procedure which we ask here. And it is the opinion of our technical witnesses that by this arrangement no one will be in anyway prejudiced provided that the allowable for the field is kept on an equitable basis. If it remains at one and a half times, the Government 40 ought to get only half of that. If the Commission decides to give the Government the full allowable, then the allowable for the field should be doubled to maintain equity. That, in brief, is our whole position here.

MR. SHEPARD: The Case will be taken under advisement and we will hear Case No. 290.

MR. CAMPBELL: I believe there may be other statements on this case.

MR. SHEPARD: Any other statements?

MR. MORRELL: Mr. Commissioner, I would like to enter into the record some comments for the benefit of the Commission in considering the application by Amerada Petroleum Corporation. I believe there are several fundamentals which should be considered in connection with this application. And I believe

this is a good time to begin to look at them.

The application stems from an exception to the state-wide rule of 40 acre proration units. The present application under consideration is an exception then to an exception. Rule 505 of the Oil Conservation Commission sets forth oil proration with deep well allowables. It is my understanding and recollection that those deep well allowables are requested and approved by the Commission as being necessary to justify drilling to the depth set forth under that rule to prevent waste.

In connection with the application of 80 acre spacing, the operators in general are asking for a multiple of that deep well allowable. I do not recall during any of the testimony that the additional allowable is necessary to prevent waste because of the inability to drill and produce wells at the depth specified with only the deep well allowable.

For the purpose of this record, I would also like to state that I have a recent letter from our Washington office which states that they agree that 80 acre spacing seems unnecessary and not conducive to efficient recoveries. Section 13-C of the New Mexico Acts relating to conservation of oil and gas, laws of 1949, does provide for pooling of property. And they also provide that under such enforcement which shall not deprive the owner of a tract of less than the pooling size to recover his just and equitable share in what crude petroleum or natural gases or both may be from the pool and underlying his property.

As a matter of practicability, to consider the 40 acres involved, which is the NE NE of Section 3, it now has or will be under the proposed 80 acre spacing, four direct off sets to the north, south, east and west. In considering drainage of oil and gas it is fundamental that the drainage will have to be considered in covering an area of a **circle**. Statements have been made before the Commission that one well will drain 80 acres. I do not recall that they have described the direction of that 80 acres.

In connection with the supervision of operations on federal acreage, we use the **circle** method in establishing provisions for compensatory royalty. In general, that circle for oil has a radius from the center of the 40 on which a well shall be drilled extending to the center of the adjoining 40, or 1320 feet.

Now, lets draw circles with a 1320 foot radius around the four direct offset wells involving the 40 acre Government tract in question. We immediately see an overlapping of the four circles almost to the extent of half of the 40 by each of those circles. The 80 acre spacing program means that the Government 40 would be offset by four wells.

Normal development on a 40 acre drilling program would mean four direct offsets and four diagonal offsets. That would make eight offset wells to the center 40. Under 40 acre proration there would be eight allowables, eight

unit allowables. But when we draw the circles with 1320 foot radius around the diagonal offset wells, we immediately add additional acreage that is not covered by circles around the direct offset wells. Here is a sketch to indicate, the shaded portion being the additional area covered by diagonal offsets. The point there is that single 40 acre allowables to eight offsets would be distributed more uniformly over a larger area, whereas, anytime the 40 acre allowable is increased on the four direct offset wells, you are concentrating the drainage to the 40 acres in question.

At present, the allowable is set by the Commission as one and a half times the normal 40 acre allowable for the existing proration units. As I understand the proposal made this morning, it was a request to consider the Government 40 on a mathematical basis, one half of what ever allowable is granted the 80. If it is fixed or retained at one and a half the normal allowable, which under the present proration schedule for June 1951 amounts to 243 barrels per day, one half of that allowable -- I said 243 barrels per day. That is, one. One and a half allowable is 365 barrels per day.

In other words, we have 365 barrels per day for one and a half normal allowable. If that is cut into one-half to set the 40 acres of an 80 acre unit, the allowable would be  $182\frac{1}{2}$  barrels. I wish to call the attention of the Commission to the fact that such reduced allowable, to  $182\frac{1}{2}$  barrels, is less than the normal 40 acre allowable for a

well drilled to only nine or ten thousand feet. That normal allowable being 197 barrels.

Then the question comes before the Commission for consideration as to whether an operator, to receive his just and equitable share, should be reduced to an allowable that is less than an allowable for a shallower depth. At the outset I mentioned that the deep pool allowables were established as being necessary. If they are necessary, to protect equities and to allow an operator to receive his just and equitable share, cutting back an allowable for any 40 acre unit below the state-wide deep pool allowable is one that I think that the Commission should give serious consideration.

The presentation of Amerada appears reasonable on the basis of the mathematics. But when we come into the fact that 40 acres is the basic unit in New Mexico the wider spacing can be looked at not on a mathematical basis but on the necessity for continuing the 40 acres as the basic unit, and any increase of a drilling above that size would receive a percentage increase.

The history of 80 acre allowables is interesting. I made a review of the allowable for June 1951, and although not directly related to this case, I am citing it only because of the reference to the 80 acres. In the Crossroads pool the allowable for June for six wells averaged only 351 barrels per well per day, which is the normal 40 acre deep well

allowable for the 12 to 13 thousand foot pool depth. And two additional wells in the Crossroads pool averaged only 230 barrels per day. In the Nowles pool which also has a producing depth of 12 to 13 thousand feet, the allowable for June 1951 was only 350 barrels per well per day for two wells and an average of 212 barrels per well per day for two other pool wells.

These are average figures so that individual wells may be higher than the average.

MR. McKELLAR: Excuse me. Are you talking about allowables or production?

MR. MORRELL: This<sup>is</sup> allowables. I don't assume production exceeds allowables. It may be less. The essential point is that the conditions after several months of operation under an 80 acre spacing indicate that the reservoirs are not of the character that can warrant continued production at a rate in excess of the present 40 acre deep well allowable.

If by a mathematical formula, such as Amerada suggests, 40 acre drilling under an 80 acre pool at an allowable less than the normal 40, there would be a serious question as to whether or not the operators could afford to drill for the lower allowable. If that was the case, there is the possibility of confiscation of rights, which are provided for under the state laws.

I am making these statements as a generality with respect to 80 acre spacing as now proposed by Amerada and

other operators in both the Bagley-Siluro-Devonian pool and other pools. I don't feel that the Commission should consider the present application of Amerada to be anything unusual merely because it happens to be Government land. I am making my statements as an overall and not <sup>that</sup> the Government wants anything special.

I think that concludes my statement. Do you have any questions?

MR. SHEPARD: Any questions?

MR. KELLOUGH: No questions. In response to Mr. Morrell, I would like to point out this fact to the Commission; and that is it is true there may be offset wells on the offset 40 surrounding this Government 40, nevertheless, those wells will have attributed to them 80 acres, and all the allowables in New Mexico are on an acreage basis.

If the Commission did attempt to fix allowables based on drainage or circle theories, I venture to say the task would be quite difficult and insurmountable. By taking Exhibit 1 and turning it diagonally, you get a picture of the square pattern spacing locations on 80 acres. And it will be observed that to each well there is attributable 80 acres, whereas, the Government 40 has only 40 acres. And we find it difficult, if not impossible, to follow the reasoning that the United States Government and their 40 acre tract would be entitled to more allowable than anybody else on an acreage basis.

Now, Mr. Morrell, in fact testified with reference, or made some statements, with reference to the production in allowables in other pools. If the Commission would like to hear testimony on that, our witness would be glad to testify. But, it is our opinion that that is not relevant to this issue in this case here before you. That is all.

MR. SHEPARD: Any further statements?

MR. CAMPBELL: If the Commission please, for Gulf Oil Corporation. On behalf of Gulf, which as the record shows has a 40 acre portion of the state lease offsetting the proposed exception, I would like to make a brief statement. I think we can all realize that there are two existing facts which we must recognize here.

One, is that this field is on 80 acre spacing. There is an existing order, a temporary order to May 1, 1952, establishing 80 acre spacing in this field. To my knowledge this is the first application for an exception. Otherwise, the field in the Devonian is on an 80 acre fixed pattern base without exception. That is an order of the Commission, and to my knowledge the order isn't under question at this time.

The only thing in question here is whether an exception should be granted, and if it is granted, what allowable should be given to it.

The second fact, I think we should recognize is that up to now allocation of production for New Mexico is based



solely on an acreage basis. There have been no other factors considered. Insofar as I know that is still the procedure in New Mexico. Recognizing those two facts, Gulf wishes to state they do not object to the granting of the exception requested here, provided there is an equitable adjustment of allowables. They concur with Amerada that if the exception is granted and if the allowable for 80 acre proration units remains at one and a half allowables, that the allowable granted to the exception, it being one half of the acreage in an 80 acre unit, should be one half of the allowable.

Gulf likewise feels if the Commission is of the opinion a 40 acre proration unit, which is the basic in New Mexico, that it cannot go below it, and choses to grant a 40 acre allowable to this tract, then the allowable in the field, the order in existence now, should be amended to provide for double allowables for the 80 acre units. The production knowledge of Gulf in this particular field is very limited. But we believe the Amerada people who have had experience in the field are acquainted with what the wells can do, at least for a period of time. Therefore we urge the Commission, if they grant this exception, to issue allowables on an acreage basis so that there will be two for one. In other words, whatever allowable they give to the 40 acre unit the 80 acre unit should be entitled to twice that allowable and the order now in existence should be amended to provide for that.

MR. MORRELL: May I ask Mr. Campbell a question?  
Mr. Campbell, you are aware that the Gulf 40 acres to which  
you refer is on the normal spacing 40 for 80 acre units?

MR. CAMPBELL: That is correct.

MR. MORRELL: Is Gulf willing to drill a well for  
one half of the present one and one half allowable?

MR. CAMPBELL: That is a policy matter for Gulf to  
decide.

MR. MORRELL: I just wanted to call that to your  
attention.

MR. CAMPBELL: They will have to drill a well.

MR. SHEPARD: Any other questions?

MR. SCHUEHLE: I represent Texas and Pacific Coal  
and Oil Company. Texas Pacific Coal and Oil Company as an  
operator in the Bagley-Siluro-Devonian Field doesn't have  
any objection to Amerada's application. However, we do  
believe equity must be maintained in the allowable. Because  
in the event the Commission sees fit to grant a full normal  
40 acre allowable, that wells drilled on 80 acre spacing must  
have double that amount, or double the 40 acre allowable.

MR. SHEPARD: Anyone else? Any further questions?  
Any other statements? If not, we will take the case under  
advisement and stand adjourned until 1:15.

(Recess.)

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO )

ss

I HEREBY CERTIFY that the foregoing and attached transcript of proceedings before the Oil Conservation Commission in Case No. 249A, taken on July 24, 1951, is a true and correct record of the same to the best of my knowledge, skill and ability.

DATED at Albuquerque, New Mexico, this 31 day of July, 1951.

G. G. Greeson  
REPORTER

My Commission Expires: 7-4-52



144A

Bagley - Siluro - Dev

LEA COUNTY

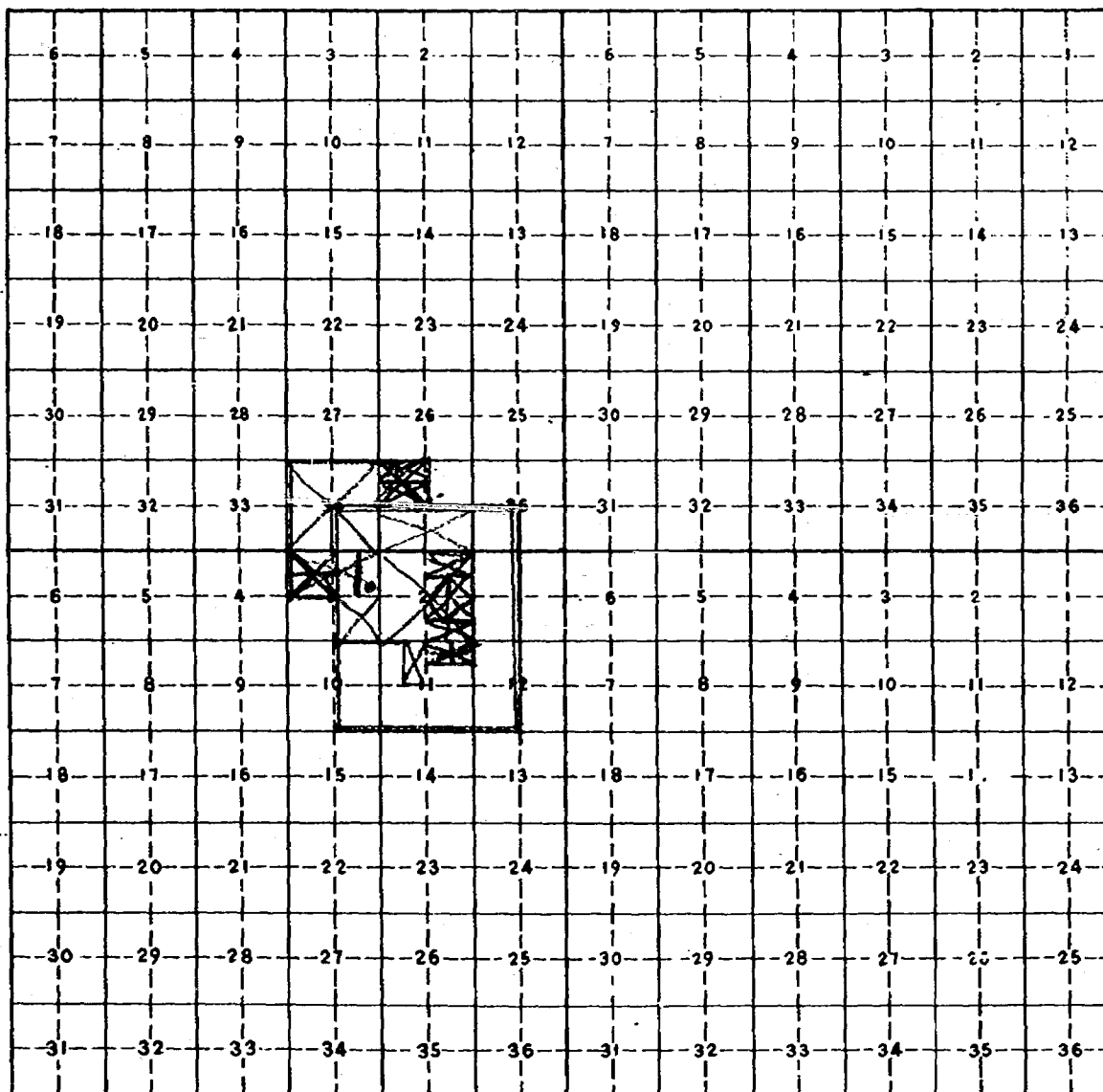
BASE AND MERIDIAN

RANGE 33E

RANGE

TWP. 11S

TWP. 12S



GENERAL OFFICES  
120 BROADWAY NEW YORK

**AMERADA PETROLEUM CORPORATION**

BEACON BUILDING

P. O. BOX 2040

TULSA 2, OKLA.

June 18, 1951

*WPA*

*July 24 hearing*

Oil Conservation Commission  
Santa Fe, New Mexico

Gentlemen:

Enclosed for filing find three copies  
of Application for Modification of Order No. R-69  
in Case No. 249.

Also enclosed for filing are three  
copies of Application for Dismissal in Case No. 251.

Will you please issue necessary no-  
tices and set these matters for hearing as soon as  
possible.

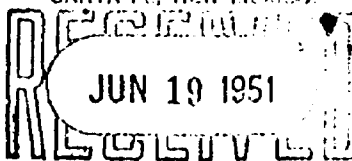
Very truly yours,

*Booth Kellough*  
BOOTH KELLOUGH  
Attorney

BK:MGH  
encls-6

Air Mail  
Special Delivery

OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO



BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN  
POOL, LEA COUNTY, NEW MEXICO

CASE NO. 249

A

APPLICATION FOR MODIFICATION OF ORDER NO. R-69

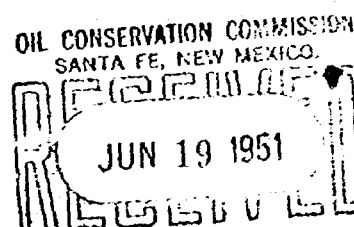
Comes now Amerada Petroleum Corporation, and alleges and states:

1. That on May 1, 1951, the Oil Conservation Commission entered its Order No. R-69 establishing 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, and requiring that all wells drilled into said pool be located in the center of the Northwest and the Southeast Quarters of each Governmental Quarter Section, as more particularly set forth in said order, reference to which is here made.

2. That by said order there was established an 80-acre proration unit comprising the E/2 NE/4 of Section 3, T-12-S, R-33-E, Lea County, New Mexico.

3. That Applicant has drilled and completed a producing oil well located in the center of SE/4 NE/4 Section 3-12S-33E, known as Mathers No. 1 Well which, under Order No. R-69, is the authorized well for the proration unit comprising the E/2 NE/4 of Section 3-12S-33E.

4. That, subject to the oil and gas leases of Applicant, the United States Government owns all royalty interest in NE/4 NE/4 of Section 3-12S-33E, and W. E. Mathers owns all royalty interest in SE/4 NE/4 Section 3-12S-33E, and both the United States Government and W. E. Mathers have expressed their objection to the forced pooling of said separately owned tracts comprising said



proration unit authorized by Sec. 69-213 $\frac{1}{2}$  (c) of 1949 Cumulative Pocket Supplement to 1941 New Mexico Statutes Annotated.

5. That, subject to the oil and gas lease of Applicant, W. E. Mathers owns all royalty or mineral interest in the NE/4 SE/4 Section 3-12S-33E.

6. That Applicant desires to drill a well projected to the Siluro-Devonian formation to be located in the center of NE/4 NE/4 Section 3-12S-33E.

7. That inasmuch as the Mathers No. 1 Well located in the center of SE/4 NE/4 Section 3-12S-33E would be the authorized well for the 80-acre proration unit herein requested and the proposed well to be located in the NE/4 NE/4 Section 3-12S-33E would be drilled on a fractional unit of 40 acres and would not be an exception to an authorized undrilled location for an 80-acre proration unit, therefore the Commission should determine the allowable for said fractional unit so as to maintain equity and protect the correlative rights of all royalty owners and lessees and modify its previous Order No. R-69 as may be necessary to accomplish this purpose.

8. That in order to prevent waste and protect the correlative rights of all lessees and royalty owners in the Bagley-Siluro-Devonian Pool, Order No. R-69 should be modified so as to establish the SE/4 NE/4 and the NE/4 SE/4 Section 3, 12S-33E as one 80-acre proration unit, and to permit Applicant to drill a well into said pool, to be located in the center of NE/4 NE/4 Section 3-12S-33E and to determine the allowable for the fractional unit of 40 acres upon which said proposed well would be located.

WHEREFORE, Applicant respectfully requests that the Commission set this application for hearing and that due and proper notice be given as required by law and that at the conclusion of said hearing the Commission enter its order modifying Order No. R-69 entered May 1, 1951, in the following particulars; to wit:



1. That SE/4 NE/4 and NE/4 SE/4 Section 3-12S-33E,  
be established as a single 80-acre proration unit;
2. That Applicant be authorized to drill a well to  
the Bagley-Siluro-Devonian Pool, to be located in  
the center of NE/4 NE/4 Section 12S-33E;
3. That an allowable should be determined which  
will maintain equity and protect the correla-  
tive rights of all parties;

and for such further relief to which Applicant may be entitled.

Dated this 15<sup>th</sup> day of June, 1951.

HERVEY, DOW & HINKLE

By *Hervey Hinkle*

HARRY D. PAGE AND BOOTH KELLOUGH

By *Booth Kellough*

Attorneys for

AMERADA PETROLEUM CORPORATION



*Case continued*  
*April 24, 1951*

NO.

ADD:

Case 242 In the matter of appl. of  
Amerada - temporary order - Bagley-Siluro-  
Revonian pool.

DATE

STATE OF NEW MEXICO,  
OIL CONSERVATION COMMISSION.  
The State of New Mexico by its Oil  
conservative Commission hereby gives no-  
tice pursuant to law and the Rules and  
regulations of said Commission promul-  
gated thereunder, of the following public  
hearing to be held January 25, 1931, be-  
ginning at 10:00 o'clock A.M. on that day,  
in the City of Santa Fe, New Mexico, in  
the Capitol.

STATE OF NEW MEXICO TO:  
All named parties in the following  
cases and notice to the public:

Case 249. In the matter of the application of Amerada Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Silluro-Devonian pool, comprising SE¼, Sec. 34; E½, Sec. 35; SW¼, Sec. 36, all in Township 11 south, Range 33 east, and W½ Sec. 1; all Sec. 2; E½ Sec. 3; E½ Sec. 10; all Sec. 11; W½ Sec. 12, all in Township 12 south. Range 33 east, Lea County, New Mexico.

**Case 230**...  
In the matter of the application of Tide-  
water Associated Oil Company for the  
inclusion of its State "B" No. 3 well, lo-  
cated in the N½ N½ Section 15, Township  
21 south, Range 37 east, Lea County, New  
Mexico, within a recognized pool upon the  
basis of evidence to be submitted.

Often under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 5, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
(SEAL) R. R. SPURRIER,

Pub.: Jan. 11, 1951.

State of New Mexico } ss.  
County of Santa Fe }

I, Will Harrison, being first duly sworn,  
declare and say that I am the (~~Business Manager~~) (Editor) of the Santa Fe

New Mexican, a daily newspaper, published in the English Language, and having a general circulation in the City and County of Santa Fe, State of New Mexico, and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 of the Session Laws of 1937; that the publication, a copy which is hereto attached, was published in said paper ~~over and over~~

for one time consecutive weeks and on the same day of each week in the regular issue of the paper during the time of publication, and that the notice was published in the newspaper proper, and not in any supplement, ~~on each week~~ for

one time written conservatively in the first publication being on the 11th day of January, 1951, and the last publication

that on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, that payment for said advertisement has been (duly made), or (assessed as court costs); that the undersigned has personal knowledge of the matters and things set forth in this affidavit.

## PUBLISHER'S BILL

lines, one time at \$\_\_\_\_\_

lines, \_\_\_\_\_ times, \$ \_\_\_\_\_

Tax \$\_\_\_\_\_

Total . . . . \$

Received payment,

**By** \_\_\_\_\_

Will Sanchez

**Editor-Manager**

Subscribed and sworn to before me this 12th

day of January, A.D., 1945

Anna K. Dinsbee

**Notary Public**

My Commission expires \_\_\_\_\_

June 14, 1953

**OIL CONSERVATION COMMISSION**  
The State of New Mexico by its Oil  
Conservative Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held January 23, 1931; beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico, in the Capitol.

STATE OF NEW MEXICO TO:  
All named parties in the following  
cases and notice to the public:

**Case 249**  
In the matter of the application of Amerasia Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising 8E½ Sec. 34; 8¼ Sec. 35; SW¼ Sec. 36, all in Township 11 south, Range 33 east, and W½ Sec. 1; all Sec. 2; E½ Sec. 3; E½ Sec. 10; all Sec. 11; W½ Sec. 12, all in Township 12 south, Range 33 east, Lea County, New Mexico.

**Case 250.**

**Case 250**  
In the matter of the application of Tide-  
water Associated Oil Company for the  
inclusion of its State "S" No. 3 well, lo-  
cated in the N½ N½ Section 15, Township  
21 south, Range 37 east, Lea County, New  
Mexico, within a recognized pool upon the  
basis of evidence to be submitted.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 5, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
(SEAL) R. R. SPURRIER,  
Secretary.

Pub.: Jan. 11, 1951.

State of New Mexico }  
County of Santa Fe }

New Mexican, a daily newspaper, published in the English Language, and having a general circulation in the City and County of Santa Fe, State of New Mexico, and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 of the Session Laws of 1937; that the publication, a copy which is hereto attached, was published in said paper ~~on the 10th day of~~

for one time ~~on any one week, and on the second or third week in~~  
the regular issue of the paper during the time of publication, and that the notice was  
published in the newspaper proper, and not in any supplement, ~~on any one week~~  
one time ~~on any one week, and on the second or third week in~~ publication being on the

\_\_\_\_\_ 11th \_\_\_\_\_ day of \_\_\_\_\_ January \_\_\_\_\_, 19 \_\_\_\_\_ 51, \_\_\_\_\_ and \_\_\_\_\_, \_\_\_\_\_  
~~therein~~ \_\_\_\_\_, \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_; that payment  
 for said advertisement has been (duly made), or (assessed as court costs); that the  
 undersigned has personal knowledge of the matters and things set forth in this affidavit.

## PUBLISHER'S BILL

lines, one time at \$

\_\_\_\_\_ lines, \_\_\_\_\_ times, \$\_\_\_\_\_

Tax \$\_\_\_\_\_

Total . . . . \$

Received payment,

By \_\_\_\_\_

✓ Editor-Memo

Subscribed and sworn to before me this 12th

day of January A.D. 1957

**Notary Public**

My Commission expires \_\_\_\_\_

June 14, 1953

**NOTICE OF PUBLICATION**  
**STATE OF NEW MEXICO**  
**OIL CONSERVATION COMMISSION**  
The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held January 25, 1951, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico, in the Capitol.

**STATE OF NEW MEXICO TO:**  
All named parties in the following cases and notice to the public:

Case 249  
In the matter of the application of Amerada Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising SE $\frac{1}{4}$  Sec. 34; S $\frac{1}{2}$  Sec. 35; SW $\frac{1}{4}$  Sec. 36, all in Township 11 south, Range 33 east, and W $\frac{1}{2}$  Sec. 1; all Sec. E $\frac{1}{2}$  Sec. 3; E $\frac{1}{2}$  Sec. 10; all Sec. 11; W $\frac{1}{2}$  Sec. 12, all in Township 12 south, Range 33 east, Lea County, New Mexico.

Case 250  
In the matter of the application of Tidewater Associated Oil Company for the inclusion of its State "S" No. 3 well, located in the N $\frac{1}{2}$  N $\frac{1}{2}$  Section 18, Township 21 south, Range 37 east, Lea County, New Mexico, within a recognized pool upon the basis of evidence to be submitted.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 9, 1951.

**STATE OF NEW MEXICO**  
**OIL CONSERVATION COMMISSION**  
(R. R. SPURRIER, Secretary.)  
Pub.: Jan. 9, 1951.

## Affidavit of Publication

State of New Mexico }  
County of Santa Fe } ss.

I, Will Harrison, being first duly sworn, declare and say that I am the (Business Manager) (Editor) of the Santa Fe New Mexican, a daily newspaper, published in the English Language, and having a general circulation in the City and County of Santa Fe, State of New Mexico, and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 of the Session Laws of 1937; that the publication, a copy which is hereto attached, was published in said paper once each week for one time consecutive weeks, and on the same day of each week in the regular issue of the paper during the time of publication, and that the notice was published in the newspaper proper, and not in any supplement, once each week for one time weeks consecutively, the first publication being on the 9th day of January, 1951, and the last publication on the 19th day of January, 1951; that payment for said advertisement has been (duly made), or (assessed as court costs); that the undersigned has personal knowledge of the matters and things set forth in this affidavit.

Will Harrison  
Editor-Manager

Subscribed and sworn to before me this 9th day of January, A.D., 1951  
Anna K. Ormsbee  
Notary Public

My Commission expires June 14, 1953

### PUBLISHER'S BILL

43 lines, one time at \$ 4.30  
\_\_\_\_ lines, \_\_\_\_\_ times, \$ \_\_\_\_\_  
Tax \$ \_\_\_\_\_  
Total . . . . . \$ \_\_\_\_\_  
Received payment, \_\_\_\_\_  
By \_\_\_\_\_

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held January 25, 1951, beginning at 10:00 A.M. on that day in the City of Santa Fe, New Mexico, in the Capitol.

STATE OF NEW MEXICO TO:  
The United States of America  
% The United States Geological Survey  
P. O. Box 997  
Roswell, New Mexico;  
W. E. Mathers  
Caprock, New Mexico;  
Susie Lee Mathers  
Caprock, New Mexico  
and all other parties having an interest in the matter.

Case 251  
In the matter of the application of Amerada Petroleum Corporation for the pooling of separately owned royalty or mineral interest in the E½ of the NE¼ of Section 3, in Township 12 south, Range 33 east, within a proposed proration unit in the Bagley-Siluro-Devonian pool, in Lea County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 5, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
(SEAL) R. R. SPURRIER,  
Secretary.

Pub.: Jan. 9, 1951.

## Affidavit of Publication

State of New Mexico }  
County of Santa Fe } ss.

I, Will Harrison, being first duly sworn, declare and say that I am the (~~Business Manager~~) (Editor) of the Santa Fe New Mexican, a daily newspaper, published in the English Language, and having a general circulation in the City and County of Santa Fe, State of New Mexico, and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 of the Session Laws of 1937; that the publication, a copy which is hereto attached, was published in said paper ~~each week~~ for one time ~~consecutive weeks, on the same day of each week in~~ the regular issue of the paper during the time of publication, and that the notice was published in the newspaper proper, and not in any supplement, ~~once each week for~~ one time ~~weeks consecutive~~ publication being on the 9th day of January, 1951, and the payment for said advertisement has been (duly made), or (assessed as court costs); that the undersigned has personal knowledge of the matters and things set forth in this affidavit.

Will Harrison  
Editor ~~Manager~~

Subscribed and sworn to before me this 9th day of January, A.D., 1951  
Anna R. Ormsbee  
Notary Public

My Commission expires  
June 14, 1953

### PUBLISHER'S BILL

39 lines, one time at \$ 3.90  
\_\_\_\_ lines, \_\_\_\_\_ times, \$ \_\_\_\_\_  
Tax \$ \_\_\_\_\_  
Total . . . . . \$ \_\_\_\_\_  
Received payment, \_\_\_\_\_  
By \_\_\_\_\_

**AFFIDAVIT OF PUBLICATION**

State of New Mexico,  
County of Lea

I, Robert L. Summers  
Publisher

Of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not in a supple-

ment thereof for a period of one time  
weeks

beginning with the issue dated —

January 9, 1951

and ending with the issue dated —

January 9, 1951

Robert L. Summers  
Publisher.

Sworn and subscribed to before

me this 18 day of —

January, 1951

Notary Public.

Dotly Deal

My commission expires

January 25, 1953

(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

**LEGAL NOTICE**

January 9, 1951

**NOTICE FOR PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION  
COMMISSION**

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held January 25, 1951, beginning at 10:00 o'clock A. M. on that day in the City of

Santa Fe, New Mexico, in the Capitol.

**STATE OF NEW MEXICO TO:**

All named parties in the following cases and notice to the public:

**CASE 249**

In the matter of the application of Amerade Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising SE  $\frac{1}{4}$  Sec. 34; S  $\frac{1}{2}$  Sec. 35; SW  $\frac{1}{4}$  Sec. 36, all in Township 11 south, Range 33 east, and W  $\frac{1}{2}$  Sec. 1; all Sec. 2; E  $\frac{1}{2}$  Sec. 3; E  $\frac{1}{2}$  Sec. 10; all Sec. 11; W  $\frac{1}{2}$  Sec. 12, all in Township 12 south, Range 33 east, Lea County, New Mexico.

**CASE 250**

In the matter of the application of Tidewater Associated Oil Company for the inclusion of its State "S" No. 3 well, located in the N  $\frac{1}{2}$  N  $\frac{1}{2}$  Section 15, Township 21 south, Range 37 east, Lea County, New Mexico, within a recognized pool upon the basis of evidence to be submitted.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 5, 1951.

**STATE OF NEW MEXICO  
OIL CONSERVATION  
COMMISSION**

SEAL

R. R. SPURRIER,  
Secretary



# LEGAL ADVERTISING

## NOTICE OF PUBLICATION STATE OF NEW MEXICO OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil  
Conservative Commission hereby gives notice  
pursuant to law and the Rules and  
Regulations of said Commission promul-  
gated thereunder, of the following public  
hearing to be held January 25, 1951, be-  
ginning at 10:00 o'clock A.M. on that day  
in the City of Santa Fe, New Mexico, at  
the Capitol.

### STATE OF NEW MEXICO TO:

All named parties in the following  
cases and notice to the public:

#### Case 249

In the matter of the application of  
Amerada Petroleum Corporation for a  
temporary order establishing protection  
units and uniform spacing of wells in  
the Bagley-Siluro-Devonian pool, compris-  
ing SE $\frac{1}{4}$  Sec. 34; S $\frac{1}{2}$  Sec. 35; SW $\frac{1}{4}$  Sec.  
36, all in Township 11 south, Range 33  
east, and W $\frac{1}{2}$  Sec. 1; all Sec. 2; E $\frac{1}{2}$  Sec.  
3; E $\frac{1}{2}$  Sec. 10; all Sec. 11; W $\frac{1}{2}$  Sec. 12, all  
in Township 12 south, Range 33 east,  
Lea County, New Mexico.

#### Case 250

In the matter of the application of Tide-  
water Associated Oil Company for the  
inclusion of its State "B" No. 3 well, lo-  
cated in the N $\frac{1}{2}$  N $\frac{1}{2}$  Section 15, Township  
21 south, Range 37 east, Lea County, New  
Mexico, within a recognized pool upon the  
basis of evidence to be submitted.

Given under the seal of the Oil Conser-  
vation Commission of New Mexico, at  
Santa Fe, New Mexico, on January 6, 1951.

### STATE OF NEW MEXICO

#### OIL CONSERVATION COMMISSION

(SEAL)

R. R. SPURRIER,  
Secretary.

Pub. Jan. 11, 1951.

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held January 25, 1951, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico, in the Capitol.

STATE OF NEW MEXICO TO:

All named parties in the following cases and notice to the public:

Case 249

In the matter of the application of Amerada Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising, SE $\frac{1}{4}$  Sec. 34; S $\frac{1}{2}$  Sec. 35; SW $\frac{1}{4}$  Sec. 36, all in Township 11 south, Range 33 east, and W $\frac{1}{2}$  Sec. 1; all Sec. 2; E $\frac{1}{2}$  Sec. 3; E $\frac{1}{2}$  Sec. 10; all Sec. 11; W $\frac{1}{2}$  Sec. 12, all in Township 12 south, Range 33 east, Lea County, New Mexico.

Case 250

In the matter of the application of Tidewater Associated Oil Company for the inclusion of its State "S" No. 3 well, located in the N $\frac{1}{2}$ N $\frac{1}{2}$  Section 15, Township 21 south, Range 37 east, Lea County, New Mexico, within a recognized pool upon the basis of evidence to be submitted.

Given under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on January 5, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*R. R. Spurrer*  
R. R. SPURRIER, SECRETARY

| DOMESTIC SERVICE                                                                                |              |
|-------------------------------------------------------------------------------------------------|--------------|
| Check the class of service desired; otherwise this message will be sent as a full rate telegram |              |
| FULL RATE TELEGRAM                                                                              | SERIAL       |
| DAY LETTER                                                                                      | NIGHT LETTER |

# WESTERN UNION

1206

| INTERNATIONAL SERVICE                                                                    |                 |
|------------------------------------------------------------------------------------------|-----------------|
| Check the class of service desired; otherwise this message will be sent at the full rate |                 |
| FULL RATE                                                                                | LETTER TELEGRAM |
| VICTORY LETTER                                                                           | SHIP RADIOGRAM  |

W. P. MARSHALL, PRESIDENT

| NO. WDS.-CL. OF SVC. | PD. OR COLL. | CASH NO. | CHARGE TO THE ACCOUNT OF    | TIME FILED |
|----------------------|--------------|----------|-----------------------------|------------|
|                      |              |          | OIL CONSERVATION COMMISSION |            |

Send the following message, subject to the terms on back hereof, which are hereby agreed to

MR HARRY PAGE  
AMERADA PETROLEUM CORPORATION  
TULSA OKLAHOMA

AUGUST 22 1951

YOUR APPLICATION CASE 249 APPROVED. ORDER WILL BE ISSUED.

R R SPURRIER  
N. M. OIL CONSERVATION COMMISSION

*Telephoned 8-22-51  
JR*

May 8, 1951

Amerada Petroleum Corporation  
Drawer G  
Monument, New Mexico

Texas-Pacific Coal & Oil Company  
305 North Leach Street  
Hobbs, New Mexico

Gentlemen:

To comply with provisions in Commission Order R-69 which became effective May 1, 1951 we are hereby revising the May allowables in the Bagley Siluro Devonian pool as follows:

| COMPANY<br>LEASE             | WELL<br>UNIT | S.T.R.   | MAY<br>DAILY | MAY<br>CUR. | P.L. | GOR  |
|------------------------------|--------------|----------|--------------|-------------|------|------|
| AMERADA PET. CORP.           |              |          |              |             |      |      |
| Caudle                       | 2 D          | 3-12-33  | 365          | 11315       | SER. | 38   |
| Chambers                     | 1 F          | 11-12-33 | 48           | 1488        | "    | 52   |
| Mathers                      | 1 H          | 3-12-33  | 365          | 11351       | "    | 27   |
| State BTA                    | 1 J          | 2-12-33  | 365          | 11315       | "    | 42   |
| " BTC                        | 1 N          | 35-11-33 | 365          | 11315       | "    | 29   |
| "                            | 3 L          | "        | 365          | 11315       | "    |      |
| "                            | 1 N          | 2-12-33  | 365          | 11315       | "    | 1121 |
| " BTD                        | 2 J          | 35-11-33 | 365          | 11315       | "    | 41   |
| "                            | 3 P          | "        | 365          | 11315       | "    | 24   |
| "                            | 1 D          | 2-12-33  | 365          | 11315       | "    | 30   |
| " BTI                        |              |          |              |             |      |      |
| TOTAL                        | 10           |          | 3333         | 103323      |      |      |
| TEXAS PACIFIC COAL & OIL CO. |              |          |              |             |      |      |
| State B                      | 1 H          | 2-12-33  | 365          | 11315       | SER. | 9    |
| " C Acl                      | 1 B          | "        | 365          | 11315       | "    | 18   |
| "                            | 2 G          | "        | 365          | 11315       | "    | 16   |

| COMPANY<br>LEASE                     | WELL<br>UNIT | S.T.R.  | MAY<br>DAILY | MAY<br>CUR. | P.L. | GOR |
|--------------------------------------|--------------|---------|--------------|-------------|------|-----|
| TEXAS PACIFIC COAL & OIL CO., CONT'D |              |         |              |             |      |     |
| State O Aol                          | 3 L          | 2-12-33 | 365          | 11315       | SER. | 25  |
| TOTAL                                | 4            |         | 1460         | 45260       |      |     |
| FIELD TOTAL                          | 14           |         | 4793         | 148583      |      |     |

Yours very truly,

OIL CONSERVATION COMMISSION

A. L. Porter, Jr.  
Proration Manager

ALP/mv

cc/Oil Conservation Comm. - Santa Fe  
Federal Petroleum Board  
Service Pipe Line Company

C  
O  
P  
Y

LAW OFFICES OF  
**HEIDEL & SWARTHOUT**  
LEA COUNTY STATE BANK BUILDING  
LOVINGTON, NEW MEXICO

F. L. HEIDEL  
A. M. SWARTHOUT

April 16, 1951

Mr. R. R. Spurrier,  
Secretary-Director  
Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Re: Case 249, Application of Amerada  
Petroleum Corporation.

Dear Mr. Spurrier:

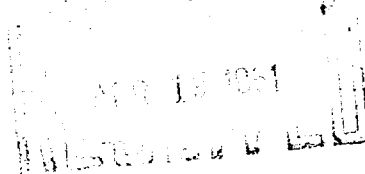
We would appreciate your mailing us a copy of the  
Application of Amerada Petroleum Corporation in the above  
numbered case, being an application for 80 acre proportion  
units in the Bagley-Siluro-Devonian Pool.

It has also come to our attention that Phillips  
Petroleum Corporation has filed an application for 80 acre  
spacing in the Denton field, and we would also appreciate  
a copy of said application.

Very truly yours,

*A. M. Swarthout*  
of Heidel & Swarthout

AMS:ma



STATE OF NEW MEXICO  
OFFICE OF STATE GEOLOGIST  
SANTA FE, NEW MEXICO

May 3, 1951

C  
O  
P  
Y  
  
Mr. Booth Kellough  
Amerada Petroleum Corporation  
Tulsa, Oklahoma

Dear Mr. Kellough:

We are enclosing one signed copy of Order No. R-69 in  
Case 249 establishing proration units and uniform spacing of wells  
for the Bagley Siluro-Devonian pool, Lea County, New Mexico.

Very truly yours,

Secretary and Director

bpw  
cc: Mr. Jack Campbell  
Roswell, N. M.  
1 - Enc. R-69

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE No. 249  
ORDER No. R-69

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR AN  
ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA COUNTY,  
NEW MEXICO

ORDER OF THE COMMISSION

BY THE COMMISSION

This matter came on for hearing at Santa Fe, New Mexico, on April 24, 1951, on the application of Amerada Petroleum Corporation to establish proration units and uniform spacing of wells for the Bagley Siluro-Devonian pool, in Lea County, New Mexico.

The Commission having heard the evidence presented and being fully advised,

FINDS:

1. That due public notice having been given as required by law, the Commission has jurisdiction of the subject matter and of the parties.
2. That the information now available indicates that one well will effectively drain an area of 80 acres and considering the shortage of casing and other tubular materials the Bagley Siluro-Devonian pool should be developed on 80-acre proration units for a period of one year.
3. That the probable productive limits of the Bagley Siluro-Devonian pool ascertainable from the information available at the time of the hearing in this case comprise the following land in Lea County, New Mexico.

All of section 34, T. 11 S, R. 33 E  
NW/4 and S/2 section 35, T. 11 S, R. 33 E  
N/2 and SE/4 section 3, T. 12 S, R. 33 E  
All of section 2, T. 12 S, R. 33 E  
E/2 NW/4 and N/2 NE/4 section 11, T. 12 S, R. 33 E

IT IS THEREFORE ORDERED:

1. That 80-acre proration units are hereby established for the Bagley Siluro-Devonian pool as delineated above, which shall comprise the west half and east half of each Governmental quarter section, except the following units, to-wit:

N/2 NW/4 section 35, T. 11 S, R. 33 E  
S/2 NW/4 section 35, T. 11 S, R. 33 E  
N/2 NW/4 section 3, T. 12 S, R. 33 E  
S/2 NW/4 section 3, T. 12 S, R. 33 E  
N/2 NE/4 section 2, T. 12 S, R. 33 E  
SW/4 NE/4 and NW/4 SE/4 section 2, T. 12 S, R. 33 E  
SE/4 NE/4 and NE/4 SE/4 section 2, T. 12 S, R. 33 E  
S/2 SE/4 section 2, T. 12 S, R. 33 E  
N/2 NE/4 section 11, T. 12 S, R. 33 E



2. All wells drilled into the Bagley Siluro-Devonian pool shall be located in the center of the northwest and the southeast quarters of each governmental quarter section, with a tolerance of 150 feet in any direction to avoid surface obstructions.

3. That no well shall be drilled or produced in said pool except in conformity with the spacing pattern set forth above without special order of the Commission after notice and hearing.

4. That all wells producing or hereafter completed in the Bagley Siluro-Devonian pool are hereby given an allowable equivalent to one and one-half times the top allowable for a 40-acre proration unit with the deep pool adaptation, as provided for in the rules and regulations of the Commission.

5. If any well is drilled as an exception to the well spacing pattern set forth above under special order of the Commission, the allowable for such well shall be the top allowable for a 40-acre proration unit with the deep pool adaptation, as provided by the rules and regulations of the Commission.

6. This order shall cover all of the Bagley Siluro-Devonian common source of supply and any extension thereof as may be determined by further development, and shall continue in force for a period of one year from the first day of May, 1951.

Done this 1st day of May 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

*Guy Shepard*  
GUY SHEPARD, Member

*R. R. Spurrier*  
R. R. SPURRIER, Secretary

BAGLEY FIELD - LEA COUNTY, NEW MEXICO:

*Amuchaple Co 2 well 249*

WELL & NO.      TOP DEVONIAN      TOP DEVONIAN PAY      DEVONIAN      DEVONIAN      COMPLETION

BTA #1      10730 (-6484)      10760 (-6514)      30'      TD 11766 (-7520) PB 10965 (-6719)

Spud 11-25-48 Comp. 2-21-49  
5-1/2" Csg. @ 11200 w/600 sacks. PB 10965 (-6719).  
Perf. 10950-65 w/60 holes. Wash w/250 gals. acid.

IP: F 1744 BOPD thru 1/2" ch. (Based on 5 1/2 hr. test of 400 BO) GOR 28-1 Grav. 44.4 Corr.

ETC #1      10662 (-6410)      10699 (-6447)      37'      TD 10980 (-6728) No PB

7-5/8" Csg. @ 10980. Spud 6-5-49  
Perf. 10959-979 w/80 holes. Comp. 10-23-49  
IP: F Nat. 1137 BOPD thru 1/2" ch. (Based on 17-3/4 hr. test of 841 BO) GOR 33-1, Grav. 46.2 Corr.

ETC #2      11603 (-7357)      11657 (-7411)      54'      TD 11715 (-7469) D & A

8-5/8" Csg. @ 3886'. D & A. Spud 3-27-50 Comp 8-11-50

ETC #3      10722 (-6470)      10767 (-6515)      45'      TD 10965 (-6713) No. PB

5-1/2" Csg. @ 10895 w/600 sacks.  
Trtd. open hole 10895-10965 w/500 gals. acid.  
IP: F 2112 BO 24 hrs. thru 1/2" ch., Gas Vol. 65,400 CRGPD, GOR 32-1, Grav. 46.0 Corr. Spud 12-15-50 Comp 4-8-51

ETD #1      10870 (-6620)      10924 (-6674)      54'      TD 10995 (-6745) No PB

5-1/2" Csg. @ 10980  
Trt. open hole 10980-995 4/500 gal. acid.  
IP: F 929 BO 24 hrs. thru 1/2" ch. GOR 32, Grav. 45.5 Corr. Spud 8-8-49 Comp 12-5-49

ETD #2      10670 (-6421)      10720 (6471)      50'      TD 10975 (-6726) No. PB

5-1/2" Csg. @ 10960.  
Trt. open hole 10960-975 w/2500 gal. acid.  
IP: F 539 BO 24 hrs. thru 1/2" ch., GOR 34-1, Grav. 46.8 Corr. Spud 11-7-49 Comp. 3-31-50

\*      BTD #3      10712 (-6465)      10777 (-6530)      65'      TD 10957 (-6710) No. PB

5-1/2" Csg. @ 10897.  
Wash open hole 10897-10957 w/500 gal. acid.  
IP: F 1130 BO plus 2.26 Bbls. BS 24 hrs. thru 1/2" ch. GOR 33-1, Grav. 45.8 Corr.

Spud 5-17-50 Comp 9-8-50

BAGLEY FIELD - IEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u><br><u>CAP</u> | <u>DEVONIAN COMPLETION</u>                                                                 |
|-----------------------|---------------------|-------------------------|-------------------------------|--------------------------------------------------------------------------------------------|
| BTI #1                | 10762 (-6512)       | 10799 (-6549)           | 37'                           | TD 10960 (-6710) No PB                                                                     |
| BTJ #1                | 10965 (-6722)       | 11066 (-6823)           | 101'                          | TD 11140 (-6897) D & A                                                                     |
| BTK #1                |                     |                         |                               |                                                                                            |
| CAUDLE #1             | 11008 (-6752)       | 11081 (-6825)           | 73'                           | TD 11083 (-6827) PB 9045 (-4789)<br><br><del>Spud 9-20-50</del><br><del>Comp 1-19-51</del> |
| CAUDLE #2             | 11010 (-6744)       | 11017 (-6751)           | 7'                            | TD 11084 (-6817) DO 11055 (-6789)                                                          |

5-1/2" Csg. @ 10922. Spud 8-14-50 Comp 12-5-50  
Wash open hole 10922-10960 w/500 gals. acid.  
IP: F 1597 BO plus 3.20 Bbls. BS 24 hrs. thru  
1/2" ch. GOR 26-1, Grav. 46.0  
Corr.

TD 11140, D & A. Spud 9-16-50 Comp. 1-17-51  
Drilling. Spud 2-9-51

Spud 3-27-49 Comp 8-12-49  
5-1/2 Csg. @ 9522, PB 9045 (-4789).  
Perf. 9040-9045, 8920-8980, 9001-9020, 9028-40.  
Trt. 250 gals. acid thru perf. 9040-45; trt. 3500  
500 gals. acid thru perf. 8920-80; trt. 2000  
gals. acid thru perf. 9001-20; trt. with 2000  
gals. acid thru perf. 9001-20 and 9028-40.  
Total 6250 Gal. acid.  
IP: F 285 BO plus 7 BW 24 hrs. thru 1/2" ch.  
GOR 1176-1, Grav. 46.8 Corr.

5-1/2" Csg. @ 11083, DO 11055. Spud 9-20-50  
Perf. 11012-11045 w/132 jet shots. Comp 1-19-51  
Trt. total 4500 gals. acid thru perf. 11012-  
11045.  
IP: F 458 BO plus 1.16 BBS plus 6 BW 24 hrs.  
thru 1/2" ch., Gas Vol. 16, 810  
CFGPD, GOR 37.1, Grav. 44.3 Corr.

BAGLEY FIELD - IEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u><br><u>CAP</u> | <u>DEVONIAN</u><br><u>COMPLETION</u> |
|-----------------------|---------------------|-------------------------|-------------------------------|--------------------------------------|
| CHAMBERS #1           | 10928 (-6678)       | 11016 (-6766)           | 88'                           | TD 11040 (-6790) PB 11026 (-6776)    |

(Turner #1  
~~CHAMBERS #2~~)

|            |               |               |     |                                  |
|------------|---------------|---------------|-----|----------------------------------|
| SIMMONS #1 | 10952 (-6699) | 11025 (-6772) | 73' | TD 11046 (-6793) PB 9040 (-4787) |
|------------|---------------|---------------|-----|----------------------------------|

|            |               |               |     |                         |
|------------|---------------|---------------|-----|-------------------------|
| MATHERS #1 | 10860 (-6606) | 10876 (-6622) | 16' | TD 10964 (-6710) No. PB |
|------------|---------------|---------------|-----|-------------------------|

Spud 4-21-50 Comp 8-16-50  
5-1/2" Csg. @ 11040, PB 11026 (-6776).  
Perf. 11010-26.  
Trtd. 250 gals. acid.  
IP: F 159 BO plus 23 BW 24 hrs. thru 1" ch. on  
gas lift.

Drilling. Spud ~~2-28-50~~

Spud 12-9-49 - Comp 4-28-50

5-1/2" Csg. @ 9450, PB 9040 (-4787)  
Perf. 9000-9040.  
Trt. with 4500 gals. acid.  
IP: F 292 BO plus 172 BW 24 hrs. thru 1/2" ch.  
GOR 1847-1, Grav. 45.3 Corr.

5-1/2" Csg. @ 10934.  
Trt. open hole 10934-10964 w/500 gal. acid.  
Perf. 5-1/2" Csg. 10920-10935 w/60 jet shots.  
Trt. open hole & Perf. w/2000 gas. acid.  
IP: F 381 BO plus 1/2 BBS plus 7 BAW 24 hrs.  
thru 1/2" ch. Gas Vol. 12,000  
CRGPD, GOR 31-1, Grav. 45.6 Corr.

Spud 10-26-50 Comp ~~2-8-51~~

BAGLEY FIELD - LEA COUNTY, NEW MEXICO

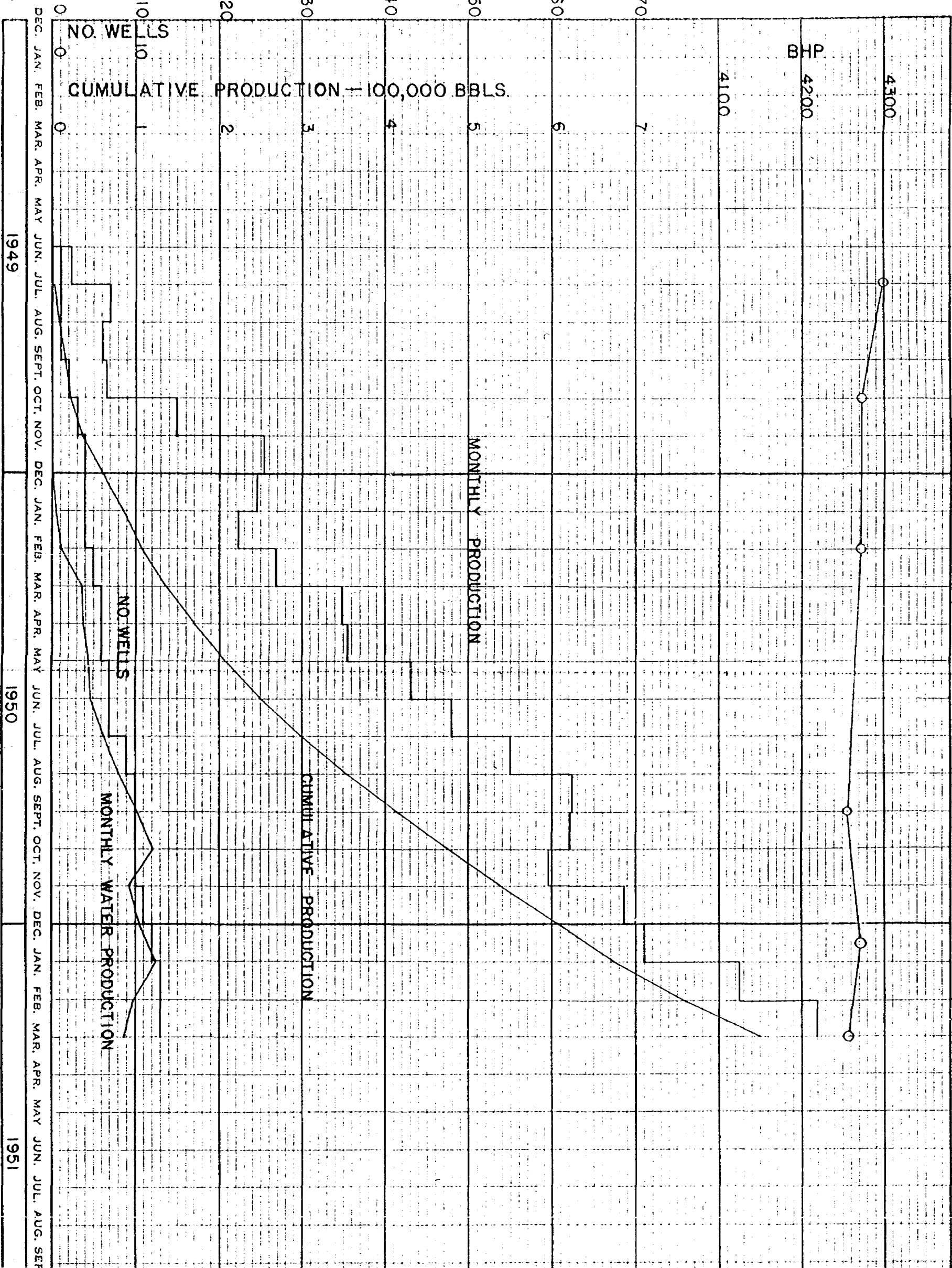
| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u><br><u>CAP</u> | <u>DEVONIAN</u><br><u>COMPLETION</u> |                                                                                                                                                                                                      |
|-----------------------|---------------------|-------------------------|-------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T&P #1-B              | 10722 (-6479)       | 10795 (-6552)           | 73'                           | TD 10914 (-6671) No. PB              | Spud 6-30-49 Comp 12-9-49<br>7-5/8" Csg. @ 10765.<br>Trt. open hole 10765-10914 with 5500 gal. acid<br>IP: F 2460 BOPD thru open 2-1/2" tbg. (based on<br>2 hr. test), GOR 12-1, Grav.<br>46.6 Corr. |
| T&P #1-C              | 10563 (-6317)       | 10660 (-6414)           | 97'                           | TD 10822 (-6576) No. PB              | 5-1/2" Csg. @ 10650. Spud 12-2-49 Comp 4-21-50<br>Wash open hole 10650-10822 with 500 gal. acid.<br>IP: F 1566 BOPD thru 3/8" ch. (Based on 4 hr<br>test, GOR 29-1, Grav. 46.1<br>Corr.              |
| T&P #2-C              | 10739 (-6491)       | 10760 (-6512)           | 21'                           | TD 10949 (-6701) No. PB              | 7" Csg. @ 10778. Spud 2-17-50 Comp 6-9-50<br>Wash open hole 10778-10949 with 500 gal. acid.<br>IP: F 1104 BO 24 hrs thru 16/64" ch.<br>GOR 27-1, Grav. 45.7.                                         |
| T&P #3-C              | 10848 (-6594)       | 10920 (-6666)           | 72'                           | TD 11034 (-6780) PB 10994 (-6740)    | 5-1/2" Csg. @ 11034, PB 10994 (-6740).<br>Perf. 10907-994.<br>Trt. 500 gal. acid<br>IP: F 1080 BO 24 hrs. thru 24/64" ch.<br>GOR 25-1, Grav. 45.6 Corr.                                              |



# MONTHLY OIL PRODUCTION 1000 BBLs.

## PRODUCTION DATA BAGLEY SILURO-DEVONIAN POOL

61 24  
1950 3 49



AMERADA PETROLEUM CORPORATION  
WELL COSTS

BAGLEY POOL  
LEA COUNTY, NEW MEXICO

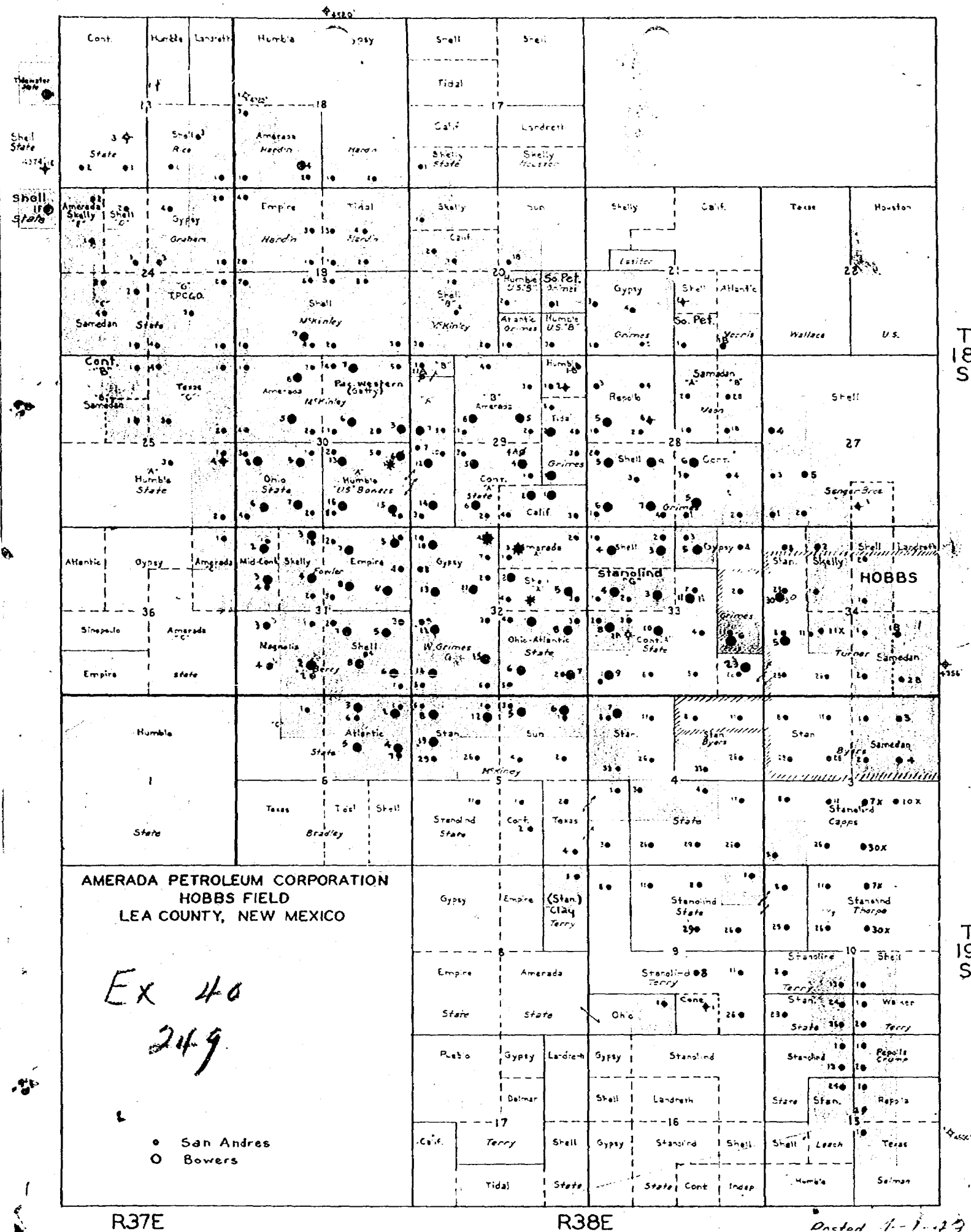
| Lease        | Well No. | Depth  | Tangible<br>Costs | Intangible<br>Costs | Total        | Remarks                                         |
|--------------|----------|--------|-------------------|---------------------|--------------|-------------------------------------------------|
| State BT "A" | 1        | 11766' | \$59,530.04       | \$359,112.11        | \$418,642.15 |                                                 |
| State BT "C" | 1        | 10980  | 64,185.64         | 216,166.87          | 280,352.51   |                                                 |
| State BT "C" | 2        | 11715  | 9,190.13          | 168,918.24          | 178,108.37   | Dry hole                                        |
| State BT "C" | 3        |        | 38,667.00         | 156,522.00          | 195,189.00   | Now drilling - cost estimated                   |
| State BT "D" | 1        | 10995  | 41,583.80         | 168,394.71          | 209,978.51   |                                                 |
| State BT "D" | 2        | 10975  | 44,136.23         | 178,529.63          | 222,665.86   |                                                 |
| State BT "D" | 3        | 10957  | 45,621.10         | 162,185.62          | 207,806.72   |                                                 |
| State BT "I" | 1        | 10960  | 43,445.00         | 157,225.00          | 200,670.00   | Recent completion - cost estimated              |
| State BT "J" | 1        | 11140  | 8,553.00          | 148,125.00          | 156,678.00   | Recent dry hole - cost estimated                |
| Caudle       | 1        | 11083  | 36,160.80         | 188,053.60          | 224,214.40   | Dry in Devonian - producing<br>in Pennsylvanian |
| Caudle       | 2        |        | 40,172.00         | 165,925.00          | 206,097.00   | Recent completion - cost estimated              |
| Chambers     | 1        | 11040  | 46,501.02         | 149,129.15          | 195,630.17   |                                                 |
| Wathers      | 1        |        | 42,137.00         | 159,425.00          | 201,562.00   | Now drilling - cost estimated                   |
| Simmons      | 1        | 11046  | 51,740.21         | 169,798.81          | 221,539.02   | Dry in Devonian - producing<br>in Pennsylvanian |

*Amrade 28*

*249*







BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE NO. 249

ORDER NO. R-69

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR AN  
ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO

ORDER OF THE COMMISSION

This matter came on for hearing at Santa Fe, New Mexico, on April 24, 1951, on the application of Amerada Petroleum Corporation to establish proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, in Lea County, New Mexico.

The Commission having heard the evidence presented and being fully advised,

FINDS:

1. That due public notice having been given as required by law, the Commission has jurisdiction of the subject matter and of the parties.
- \* 2. That all of the allegations contained in the application filed herein by Amerada Petroleum Corporation are true and correct.
3. That the probable productive limits of the Bagley-Siluro-Devonian Pool ascertainable from the information available at the time of the hearing in this case comprise the following land in Lea County, New Mexico:

All of Sec. 34 - T 11 S - R 33 E  
NW and S/2, Sec. 35 - T 11 S - R 33 E  
N/2 and SE, Sec. 3 - T 12 S - R 33 E  
All of Sec. 2 - T 12 S - R 33 E  
E/2 NW and N/2 NE, Sec. 11 - T 12 S - R 33 E

IT IS THEREFORE ORDERED:

1. That 80 acre proration units are hereby established for the Bagley-Siluro-Devonian Pool as delineated above, which shall comprise the West half and East half of each Governmental quarter section, except the following units, to-wit:

N/2 NW, Sec. 35 - T 11 S - R 33 E  
 S/2 NW, Sec. 35 - T 11 S - R 33 E  
 N/2 NW, Sec. 3 - T 12 S - R 33 E  
 S/2 NW, Sec. 3 - T 12 S - R 33 E  
 N/2 NE, Sec. 2 - T 12 S - R 33 E  
 SW NE and NW SE, Sec. 2 - T 12 S - R 33 E  
 SE NE and NE SE, Sec. 2 - T 12 S - R 33 E  
 S/2 SE, Sec. 2 - T 12 S - R 33 E  
 N/2 NE, Sec. 11 - T 12 S - R 33 E

2. All wells drilled into the Bagley-Siluro-Devonian Pool shall be located in the center of the Northwest and the Southeast quarters of each governmental quarter section, with a tolerance of 150 feet in any direction to avoid surface obstructions.

3. That no well shall be drilled or produced in said Pool except in conformity with the spacing pattern set forth above without special order of the Commission after notice and hearing.

4. That all wells producing or hereafter completed in the Bagley-Siluro-Devonian Pool are hereby given an allowable equivalent to ~~one and one-half~~ times the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided for in the rules and regulations of the Commission.

5. If any well is drilled as an exception to the well spacing pattern set forth above under special order of the Commission, the allowable for such well shall be the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided by the rules and regulations of the Commission.

6. This order shall cover all of the Bagley-Siluro-Devonian common source of supply and any extension thereof as may be determined by further development, and shall continue in force for a period of one year from the first day of May, 1951.

Done this 1 day of May, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

Edwin L. Mechem, Chairman

Guy Shepard, Member

R. R. Spurrier, Secretary

Approved

Don A. McCombs  
 Jack M. Campbell  
 Booth Kellough

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

Case No. 249  
Order No. R49

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR  
A TEMPORARY ORDER ESTABLISHING PRO-  
RATION UNITS AND UNIFORM SPACING OF  
WELLS FOR THE BAGLEY SILURO-DEVONIAN  
POOL, COMPRISING, SE 1/4 section 34; S 1/2  
section 35; SW 1/4 section 36, all in T. 11 S, R. 33 E,  
and W 1/2 section 1; all section 2; E 1/2 section 3;  
E 1/2 section 10; all section 11; W 1/2 section 12, all  
in T. 12 S, R. 33 E, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This matter came on for hearing at 10:00 o'clock a.m. on  
January 25, 1951, at Santa Fe, New Mexico, before the Oil Conservation  
Commission of New Mexico, and upon motion of Booth Kellough,  
attorney for Amerada Petroleum Corporation, for a continuance of 90  
days, it is hereby ordered that this case be continued and set down for  
the regular April 24, 1951 hearing of the Oil Conservation Commission in  
Santa Fe, New Mexico.

DONE at Santa Fe, New Mexico, this 25th day of January, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*Edwin L. Mechem*  
EDWIN L. MECHEM, Chairman

*Guy Shepard*  
GUY SHEPARD, Member

*R. R. Spurrer*  
R. R. SPURRIER, Secretary

**CLASS OF SERVICE**  
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

W. P. MARSHALL, PRESIDENT

1220

**SYMBOLS**  
DL = Day Letter  
NL = Night Letter  
LC = Deferred Cable  
NLT = Cable Night Letter  
Ship Radiogram

The filing time shown in the data line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA04 KB245

K. TUC109 LONG DL PD=WUX TULSA OKLA 22 257P=  
OIL CONSERVATION COMMISSION=

1951 JAN 22 PM 2 19

SANTA FE NMEX=

IN RE: APPLICATION OF AMERADA CASE (NO. 249) FOR TEMPORARY  
ORDER ESTABLISHING EIGHTY ACRE PRORATITN UNITS AND SPACING OF  
WELLS FOR BAGLEY-SALURO-DEVONIAN POOL, IN LEA COUNTY, NEW  
MEXICO STOP SINCLAIR OIL AND GAS COMPANY IS IN FAVOR AND  
SUPPORTS SUCH APPLICATION PARTICULARLY IN VIEW OF THE  
NECESSITY OF SAVING MATERIAL AND MANPOWER STOP THESE WELLS.  
AS YOU KNOW, ARE VERY DEEP AND REQUIRE THE USE OF LARGE  
QUANTITIES OF LABOR AND MATERIALS=

SINCLAIR OIL AND GAS CO BY J W JORDAN VICE  
PRESIDENT=

25

## BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF  
 AMERADA PETROLEUM CORPORATION FOR AN  
 ORDER ESTABLISHING PRORATION UNITS  
 AND UNIFORM SPACING OF WELLS FOR  
 THE BAGLEY-SILURO-DEVONIAN POOL,  
 LEA COUNTY, NEW MEXICO

CASE NO. \_\_\_\_\_

A P P L I C A T I O N

Comes now Amerada Petroleum Corporation and alleges  
 and states:

1. That Applicant has drilled and completed seven wells producing from the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, found at the approximate depth of 10,800 feet, the description and location of said wells being as follows:

- (a) State BTA No. 1 located in center of NW/4 SE/4 of Section 2, T-12-S, R-33-E;
- (b) State BTC No. 1 located in center of SE/4 SW/4 of Section 35, T-11-S, R-33-E;
- (c) State BTD No. 1 located in center of SE/4 SW/4 Section 2, T-12-S, R-33-E;
- (d) State BTD No. 2 located in center of NW/4 SE/4 Section 35, T-11-S, R-33-E;
- (e) State BTD No. 3 located in center of SE/4 SE/4 Section 35, T-11-S, R-33-E;
- (f) Chambers No. 1 located in center of SE/4 NW/4 Section 11, T-12-S, R-33-E;
- (g) State BTI No. 1 located in center of NW/4 NW/4 Section 2, T-12-S, R-33-E;

2. That Texas-Pacific Coal & Oil Company has drilled and completed four wells producing from the Bagley-Siluro-Devonian Pool, the description and location of said wells being as follows:

- (a) State B No. 1 located in center of SE/4 NE/4 of Section 2, T-12-S, R-33-E;
- (b) State C No. 1 located in center of NW/4 NE/4 of Section 2, T-12-S, R-33-E;
- (c) State C No. 2 located in center of SE/4 NW/4 of Section 2, T-12-S, R-33-E;
- (d) State C No. 3 located in center of NW/4 SW/4 of Section 2, T-12-S, R-33-E.

3. That in addition to the above-described completed wells the following wells are now being drilled in the area and are projected to the Siluro-Devonian formation in what is believed to be included in the Bagley-Siluro-Devonian Pool, the description and location of said drilling wells being as follows:

- (a) Mathers No. 1 Well located in center of SE/4 NE/4 Section 3, T-12-S, R-33-E;
- (b) Caudle No. 2 Well located in center of NW/4 NW/4 Section 3, T-12-S, R-33-E;
- (c) State BTC No. 3 located in NW/4 SW/4 Section 35, T-11-S, R-33-E;
- (d) State BTJ No. 1 located in center of SE/4 NE/4 Section 11, T-12-S, R-33-E.

4. That Applicant heretofore filed its application for the establishment of 80-acre proration units, Case No. 191, which application came on for hearing on December 20, 1949. On January 23, 1950, the Commission entered its order denying said application on the ground that the evidence submitted at that time was insufficient. Applicant in due course filed its application for rehearing which was denied by the Commission by order of February 8, 1950, and thereupon Applicant filed its petition for review in District Court of Lea County, Case No. 8485. On December 27, 1950, Applicant voluntarily dismissed with prejudice its appeal in the District Court of Lea County. At the time of the first hearing of this matter before the Commission there had been completed in the Bagley-Siluro-Devonian reservoir only four wells. Since that time there has been a change of conditions in the development of the field and additional information has been obtained by the subsequent development and the production performance of the wells. There has now developed a widespread, critical shortage of tubular materials necessary for drilling operations, and to require Applicant to drill any unnecessary wells would result in wasteful utilization of critical materials to the detriment of the oil and gas industry, the State of New Mexico and the nation at large. That because of the change of conditions in the Bagley-Siluro-Devonian Pool and the additional information obtained by additional development and well performance subsequent to the original hearing in this matter, indicating that one well will adequately drain an area of at least 80 acres, and because of the critical shortage of casing and tubular materials and in order to prevent waste and to avoid the drilling of unnecessary wells, the Commission should now enter a temporary order for a period of one year, establishing 80-acre proration units.

5. That the probable productive limits of the Bagley-Siluro-Devonian Pool have not yet been definitely determined and the Commission should make such determination for the temporary period of the order herein applied for and such order should be applicable to the entire common source of supply as it may be determined from time to time.

6. That such 80-acre proration units should consist of the West Half and the East Half of each governmental quarter section in the Bagley-Siluro-Devonian Pool, except the following units which should be exceptions in order to prevent unnecessary pooling of separately owned tracts within a proration unit, to wit:

N/2 NE/4 Section 2-12S-33E;  
 SW/4 NE/4 and NW/4 SE/4 Section 2-12S-33E;  
 SE/4 NE/4 and NE/4 SE/4 Section 2-12S-33E;  
 S/2 SE/4 Section 3-12S-33E;  
 N/2 NE/4 Section 11-12S-33E;  
 S/2 NE/4 Section 11-12S-33E.

7. That to insure the proper and uniform spacing of all wells drilled to the common source of supply comprising the Bagley-Siluro-Devonian Pool and to protect the correlative rights of all of the parties interested therein, all wells drilled into said common source of supply should be located in the center of the northwest and the southeast quarters of each governmental quarter section. That all presently drilled and drilling wells are located according to the spacing pattern herein proposed.

8. That all wells producing from the Bagley-Siluro-Devonian Pool should be given an allowable equivalent to one and one-half times the top allowable for the regular forty-acre proration unit with the deep pool adaptation as provided for in the general rules and regulations of the Commission and any other special orders that may, from time to time, be applicable.

9. That in the event cause is shown for the granting of an exception to the well location pattern herein proposed such exception should be granted by the Commission after notice of hearing, but in the event such exception is granted, the allowable for said well should be only the top allowable for a regular forty-acre proration unit with the deep pool adaptation as provided by the rules and regulations of the Commission.

WHEREFORE, Applicant respectfully requests that the Commission set this application for hearing and that due and proper notice be given as required by law and that at the conclusion of said hearing the Commission then enter a temporary order expiring at the end of one year unless extended by the Commission, establishing 80-acre proration units and the uniform spacing of wells, fixing the allowable therefor, and determining and defining the probable productive limits of said pool all in accordance with the allegations and proposals hereinabove set forth, and for such further relief to which Applicant may be entitled.

DATED this 28<sup>th</sup> day of December, 1950.

Seth & Montgomery

By *Chas. Seth*

Harry D. Page and Booth Kellough

By *Booth Kellough*

Attorneys for  
Amerada Petroleum Corporation





NO.

NAME

Paul 249 - 1953

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN RE: CASES 249 AND 315  
(CONSOLIDATED) - TEMPORARY  
80-ACRE SPACING IN THE  
BAGLEY-SILURO-DEVONIAN POOL,  
LEA COUNTY, NEW MEXICO

ORDER NO. R-69-B

INTERLOCUTORY ORDER

WHEREAS on the 29th day of April, 1952, the Oil Conservation Commission of New Mexico issued Order R-69-A as a temporary order for a period of one year from and after May 1, 1952, and

WHEREAS said order will expire by its own terms unless extended, and

WHEREAS due notice to show cause why the Bagley-Siluro-Devonian Pool in Lea County, New Mexico, should not be placed on 40-acre spacing with allowable adjustment following expiration of Order R-69-A, was given all interested parties, returnable April 17, 1953, and each and all of the parties duly appeared on said date, and moved the Commission for continuance, and

Good cause therefor appearing,

IT IS THEREFORE ORDERED:

First, That said cause be, and the same hereby is continued to the next regularly advertised hearing of this Commission;

Second, That all the rights, obligations and duties included in and imposed by Order R-69-A dated April 29, 1952, be, and the same hereby are extended, and remain in full force and effect until the regular May 1953 hearing of the Commission, and the regular issuance thereafter of the Commission order in the premises, but in no event beyond June 1, 1953.

DONE at Santa Fe, New Mexico, this 20<sup>th</sup> day of April, 1953.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*E. L. Mechem*  
Edwin L. Mechem, Chairman

*E. S. Walker*  
E. S. Walker, Member

*R. R. Spurrier*  
R. R. Spurrier, Secretary

S E A L

OIL CONSERVATION COMMISSION

P. O. BOX 871  
SANTA FE, NEW MEXICO

October 28, 1952

C

Texas Pacific Coal & Oil Co.  
Attention: Mr. Eugene Adair, General Counsel  
Ft. Worth National Bank Bldg.  
Ft. Worth, Texas

O

Amerada Petroleum Corporation  
Attention: Mr. R. S. Christie  
Box 2040  
Tulsa, Oklahoma

P

Gentlemen:

In compliance with Order R-69-A, you are required to take bottom-hole pressures in the Bagley-Siluro-Devonian Pool in November 1952.

Y

An examination of the previous pressures reveals a wide range in shut-in times for different surveys. In order that there may be a similarity in shut-in time on each well, I believe that it would be advisable for you to maintain shut-in times as close to 48 hours as operating practices will permit.

Yours very truly,

W. B. Macey  
Chief Engineer

WBM:nr

F

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:

CASES 249 AND 315  
(Consolidated)  
ORDER No. R-69-A

THE MATTER OF THE APPLICATION  
OF AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN POOL,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at Santa Fe, New Mexico,  
on April 24, 1951, and again on April 15, 1952, before the Oil Conservation  
Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this day of April, 1952, the Commission, a  
quorum being present, having considered the testimony adduced and the  
exhibits received at said hearings, and being fully advised in the premises,

FINDS:

(1) That due public notice has been given as required by law,  
and the Commission has jurisdiction of this cause and all the matters and  
things relating thereto.

(2) That heretofore, the Commission, by virtue of Order No.  
R-69, to which reference is hereby made, established 80-acre proration  
units, establishing a spacing pattern, provided for an allowable equal to  
one and one-half times the top allowable for a 40-acre proration unit  
(with deep-pool adaptation), and provided for an exception to the 80-acre  
drilling pattern with adjustment of allowables.

(3) That Order No. R-69, effective May 1, 1951, was a  
Temporary Order, established for a period of one year.

(4) That geological and engineering data now available to  
the Commission indicates that one well <sup>apparently</sup> will effectively drain 80 acres and,  
~~(considering the shortage of casing and other tubular materials)~~ the  
Bagley-Siluro-Devonian Pool should be developed on 80-acre proration  
units for a further period of one year.

(5) That information presented to the Commission indicates  
that the adoption of secondary-recovery methods at <sup>present</sup> this time is not ~~apparently~~  
necessary. <sup>present</sup>

(6) That the operators in the Bagley-Siluro-Devonian pool should present to the Commission a monthly report showing complete production and reservoir information.

(7) That Order No. R-69 should be extended for a period of one year upon the conditions and limitations herein set forth.

IT IS THEREFORE ORDERED:

(1) That Order No. R-69 be, and it hereby is extended for a period of one year from the first day of May, 1952, upon the following terms and conditions, to wit:

(a) That each operator in the Bagley-Siluro-Devonian Pool shall file with the Commission office at Santa Fe, New Mexico, on or before the 15th day of each and every month, a monthly tabulated report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production. This requirement is in addition to and supplementary to the other reports and surveys presently required by the Commission, and is not in substitution or in lieu thereof.

(b) That said operators shall cause a pool-wide bottom-hole pressure survey to be taken during the months of July 1952, November 1952, and March 1953, and the results thereof reflecting such pressures of each well shall be submitted in writing to the Commission on or before the fifth day of the following month. (Bottom-hole pressure tests shall be taken as prescribed by Rule 302 of the Commission's Rules and Regulations.)

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

GUY SHEPARD, Member

R. R. SPURRIER, Secretary

SEAL

*(4) at the regular  
Commission hearing for the  
month of April in 1953  
the operators shall cause  
cause why said pool  
shall not be placed on  
a 40 acre spacing  
pattern with allowable adjustment*

247

ATWOOD, MALONE & CAMPBELL  
LAWYERS

JEFF D. ATWOOD  
ROSS L. MALONE, JR.  
JACK M. CAMPBELL

CHARLES F. MALONE

J.P. WHITE BUILDING  
ROSWELL, NEW MEXICO

April 4, 1952

OIL CONSERVATION COMMISSION  
NEW MEXICO

APR 7 1952

Mr. Bill Macy,  
Chief Engineer  
Oil Conservation Commission,  
Santa Fe, New Mexico.

Dear Bill:

Thank you for sending the copy of the proposed order in the Magruder matter. I will send this back to you so you will have it on Monday morning.

There is one favor that I would like to ask of you if it is practicable. Eugene Adair, of Texas Pacific Coal & Oil Company which is interested in the hearing on April 15 on the Bagley Field, has to get to a Railroad Commission hearing in Austin and since the Knowles and Hightower Fields matter, which have been postponed on various occasions, and the Bagley matter will probably be on the docket together anyway, I would appreciate it if the Commission could hear the testimony in the Bagley case first and I feel sure Amerada will have no objection to it.

Very truly yours,

*Jack M. Campbell*

for ATWOOD, MALONE & CAMPBELL

JMC:hl

*OK*

MAIN OFFICE OCC

1954 AUG 13 AM 9:34  
Tatum, New Mexico  
August 5, 1954

Oil Conservation Commission  
Santa Fe, New Mexico

Gentlemen:

In compliance with your order no. R-69-C dated May 21, 1953, concerning the Hagley Siluro-Devonian Pool, Lea County, New Mexico, we are submitting the attached tabulation of production data for the month of July 1954.

Contained in the tabulation is a monthly report for each well showing the allowable, the actual oil produced, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production.

Yours very truly,

*K.V. Stephenson*  
K.V. Stephenson

KVS/arc

cc: Oil Conservation Commission, Hobbs, New Mexico

W.D. McCoy  
R.S. Christie  
R.E. Seifert  
J.C. Blackwood  
D.C. Capps  
W.G. Abbott  
Tatum File



# WACHTER OIL & GAS COMPANY

## PRODUCTION DATA

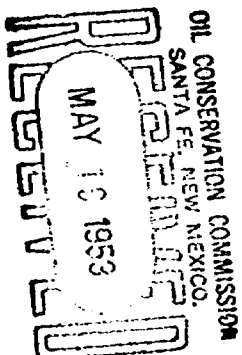
JULY 1952

| LEASE & WELL        | ALLOWABLE<br>BBLs. | ACTUAL<br>OIL BBLs | OIL RUN<br>BBLs | WATER<br>BBLs | GAS<br>CU. FT. | CUMULATIVE<br>OIL BBLs | CUMULATIVE<br>WATER BBLs | CUMULATIVE<br>GAS CU. FT. |
|---------------------|--------------------|--------------------|-----------------|---------------|----------------|------------------------|--------------------------|---------------------------|
| State B.T. "A" #1   | 7037               | 7037               | 6210            | 5529          | 225,184        | 492,290                | 29,820                   | 15,753,200                |
| State B.T. "C" #1   | 7037               | 7235               | 7390            | None          | 231,520        | 473,030                | None                     | 15,138,560                |
| State B.T. "C" #3   | 7037               | 7235               | 7390            | None          | 231,520        | 357,260                | None                     | 11,432,320                |
| State B.T. "C" #1   | 7037               | 7037               | 6914            | None          | 225,184        | 452,710                | 110,195                  | 14,436,720                |
| State B.T. "C" #2   | 7037               | 7037               | 6914            | 1759          | 225,184        | 370,066                | 55,914                   | 21,842,112                |
| State B.T. "C" #3   | 7037               | 7037               | 6914            | None          | 225,184        | 358,131                | 16,744                   | 11,460,192                |
| State B.T. "I" #1   | 6944               | 6944               | 6240            | None          | 222,208        | 394,729                | None                     | 12,311,328                |
| State B.T. "L" #1   | 7037               | 7052               | 7109            | None          | 225,664        | 309,307                | None                     | 9,397,024                 |
| State B.T. "H" #1   | 1178               | 909                | 951             | 12,077        | 29,038         | 27,423                 | 277,240                  | 877,696                   |
| State B.T. "H" #1   | 7037               | 7037               | 7157            | 1545          | 225,184        | 207,095                | 13,701                   | 6,627,040                 |
| J.T. Caudle #2      | 2170               | 1249               | 1337            | 7396          | 59,168         | 182,000                | 223,404                  | 5,824,000                 |
| J.T. Caudle #5      | 3100               | 2147               | 2339            | 8077          | 68,704         | 139,388                | 110,542                  | 4,460,424                 |
| L.H. Chambers #1    | 1798               | 1316               | 1417            | 5184          | 38,912         | 74,221                 | 170,540                  | 2,375,072                 |
| W.E. Mathers #1     | 7037               | 7037               | 7190            | 3466          | 225,184        | 335,236                | 64,906                   | 10,727,552                |
| W.E. Mathers "A" #1 | 5570               | 5570               | 5416            | 3133          | 178,240        | 286,035                | 41,393                   | 9,153,120                 |
| W.E. Mathers "A" #2 | 1718               | 1718               | 1670            | 11,497        | 54,976         | 154,009                | 306,860                  | 4,928,288                 |
| TOTALS              | 85,811             | 84,097             | 83,758          | 59,663        | 2,691,104      | 4,602,935              | 1,422,599                | 147,295,520               |

SAGEBY FIELD - LEA COUNTY, NEW MEXICO:

Case 249

Exhibit # G



| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN CAP</u> | <u>DEVONIAN COMPLETION</u>          |                                                                                                                                                                                                                                                            |
|-----------------------|---------------------|-------------------------|---------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BTA #1                | 10,730 (-6424)      | 10,760 (-6514)          | 30'                 | TD 11,766 (-7520) PB 10,965 (-6719) | 5-1/2" Csg. @ 11,200 with 600 sacks. PB 10,965 (-6719).<br>Perf. 10,960-65 with 60 holes. Wash with 250 gals. acid.<br>IP: P 17 1/4 BOFD thru 1/2" ch. (Based on 5 1/2 hr. test. of 400 BO) GOR 28-1, Grav. 44.4 Corr.<br>Spud 11-25-48 Completed 7-16-49. |
| BTC #1                | 10,662 (-6410)      | 10,699 (-6447)          | 37'                 | TD 10,980 (-6728) No PB             | 7-5/8" Csg. @ 10,980.<br>Perf. 10,959-979 with 80 holes.<br>IP: F Mat. 1137 BOFD thru 1/2" ch. (Based on 17-3/4 hr. test of 841 BO) GOR 33-1, Grav. 46.2 Corr.<br>Spud 6-5-49 Completed 10-23-49                                                           |
| BTC #2                | 11,603 (-7357)      | 11,657 (-7411)          | 54'                 | TD 11,715 (-7469) D & A             | 8-5/8" Csg. @ 3886'.<br>Spud 3-27-50 Completed 8-11-50                                                                                                                                                                                                     |
| BTC #3                | 10,722 (-6470)      | 10,767 (-6515)          | 45'                 | TD 10,965 (-6713) No PB             | 5-1/2" Csg. @ 10,895 with 660 sacks.<br>Trtd. open hole 10,895-10,965 with 500 gals. acid.<br>IP: F 2112 BO 24 hrs. thru 1/2" ch. Gas Vol. 65,400 CFCFD, GOR 32-1, Grav. 46.0 Corr.<br>Spud 12-15-50 Completed 4-8-51                                      |
| BTD #1                | 10,870 (-6620)      | 10,924 (-6674)          | 54'                 | TD 10,995 (-6745) No PB             | 5-1/2" Csg. @ 10,980'.<br>Trt. open hole 10,980-995 with 500 gals. acid.<br>IP: F 929 BO 24 hrs. thru 1/2" ch. GOR 32, Grav. 45.5 Corr.<br>Spud 8-8-49 Completed 12-5-49.                                                                                  |

PAGE #2 BAGLEY FIELD - LSA COUNTY, NEW MEXICO

| WELL & NO. | TOP DEVONIAN   | TOP DEVONIAN PAY | DEVONIAN CAP | DEVONIAN                                                             | DEVONIAN | COMPLETION                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|----------------|------------------|--------------|----------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BTD #2     | 10,670 (-6421) | 10,720 (-6471)   | 50'          | TD 10,975 (-6726)                                                    | No PB    | 5-1/2" Csg. @ 10,960.<br>Trt. open hole 10,960-975 with 2500 gals. acid.<br>IP: F 539 BO 24 hrs. thru 1/2" ch. GOR 34-1, Grav. 46.8 Corr.<br>Spud 11-7-49 Completed 3-31-50                                                                                                                                                                                                                           |
| BTD #3     | 10,712 (-6465) | 10,777 (-6530)   | 65'          | TD 10,957 (-6710) No PB<br>PB (-6623)<br>(-6481) - 6568<br>6563 6578 |          | 5-1/2" Csg. @ 10,897.<br>Wash open hole 10,897-10,957 with 500 gals. acid.<br>IP: F 1130 BO plus 2.26 Bbls. BS 24 hrs. thru 1/2" ch. GOR 33-1, Grav. 45.8 Corr.<br>Spud 5-17-50 Completed 9-8-50.                                                                                                                                                                                                     |
| BTI #1     | 10,762 (-6512) | 10,799 (-6549)   | 37'          | TD 10,960 (-6710) No PB                                              |          | 5-1/2" Csg. @ 10,922.<br>Wash open hole 10,922-10,960 with 500 gals. acid.<br>IP: F 1597 BO plus 3.20 Bbls BS 24 hrs. thru 1/2" ch. GOR 26-1, Grav. 46.0 Corr.<br>Spud 8-14-50 Completed 12-5-50                                                                                                                                                                                                      |
| BTJ #2     | 10,965 (-6722) | 11,066 (-6823)   | 101'         | TD 11,140 (-6897) D & A                                              |          | TD 11,140'.<br>Spud 9-16-50 Completed 1-17-51                                                                                                                                                                                                                                                                                                                                                         |
| BTX #1     | 10,997 (-6732) | 11,047 (-6782)   | 50'          | TD 11,060 (-6795) PB 9435 (-5178)                                    |          | 5-1/2" Csg. @ 9915 PB 9435 (-5175)<br>Perf. 9045-63, 9290-9306, 9320-75, 9390-9435.<br>Trt. 4000 gals. acid thru perf. 9045-63.<br>Trt. 3000 gals. acid thru perf. 9320-75.<br>Trt. 1000 gals. acid thru perf. 9290-9306.<br>Total 8000 gals. acid.<br>Set pkr. @ 9246.<br>IP: F 313 BO 24 hrs. thru 24/64" ch. Gas Vol. 1,673.327 CPGD, GOR 5349-1, Grav. 49.9 Corr.<br>Spud 2-9-51 Completed 6-9-51 |

PAGE #3 BACILEY FIELD - LEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u><br><u>CAP</u> | <u>DEVONIAN COMPLETION</u>          |
|-----------------------|---------------------|-------------------------|-------------------------------|-------------------------------------|
| BTL #1                | 10,824 (-6579)      | 10,838 (-6593)          | 14'                           | TD 10,970 (-6725) PB 10,952 (-6707) |
| BTL #1                | 10,960 (-6705)      | 10,984 (-6729)          | 24'                           | TD 11,040 (-6785) PB 11,006 (-6751) |
| BTL #1                | 11,008 (-6752)      | 11,081 (-6825)          | 73'                           | TD 11,083 (-6827) PB 9045 (-4789)   |

5-1/2" Csg. @ 10,970 PB 10,952.  
Perf. 10,840-10,888 & 10,928-10,952.  
Trt. perf. with 2000 acid.  
IP: F 733 BO 24 hrs. thru 1/4" ch., GOR 49-1,  
Grav. 45.5 Corr.  
Spud 5-17-51 Completed 8-28-51

5-1/2" Csg. 11,040 PB 11,006.  
Perf. 10,976-11,006.  
Trt. 1000 acid.  
Re-trt. 1000 acid.  
IP: F 65 BO plus 374 BW 24 hrs. thru 3/4" ch.  
on input gas. Grav. 45.9 Corr.  
Spud 7-18-51 Completed 10-25-51

Drilling. Spud 3-4-52. Comp. 6-4-52 See  
See completion last sheet.  
5-1/2" Csg. @ 9522, PB 9045 (-4789).  
Perf. 9040-9045, 8920-8980, 9001-9020,  
9028-40.  
Trt. 250 gals. acid thru perf. 9040-45;  
Trt. 500 gals. acid thru perf. 8920-80;  
Trt. 3500 gals. acid thru perf. 9001-20;  
Trt. with 2000 gals. acid thru perf.  
9001-20 and 9028-40.  
Total 6250 gal. acid.  
IP: F 285 BO plus 7 BW 24 hrs. thru 1/2"  
ch. GOR 1176-1, Grav. 46.8 Corr.  
Spud 3-27-49 Completed 8-12-49

PAGE #4. SAGLEY FIELD - LEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP LAMONTIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN<br/>CAP</u> | <u>DEVONIAN</u>                     | <u>COMPLETION</u> |
|-----------------------|----------------------|-------------------------|-------------------------|-------------------------------------|-------------------|
| CANDLE #2             | 11,010 (-6744)       | 11,017 (-6751)          | 7'                      | TD 11,084 (-6817) DO 11,055 (-6789) |                   |
| CANDLE #5             | 10,844 (-6588)       | 10,866 (-6610)          | 22'                     | TD 10,966 (-6710) NO FB             |                   |
| CHAMBERS #1           | 10,928 (-6678)       | 11,016 (-6766)          | 88'                     | TD 11,040 (-6790) PB 11,026 (-6776) |                   |
| CHAMBERS #2           | 10,890 (-6641)       | 10,979 (-6730)          | 89'                     | TD 11,000 (-6751) PB 9033 (-4784)   |                   |

5-1/2" Csg. @ 11,083, DO 11,055.  
Perf. 11,012-11,045 with 132 jet shots.  
Trt. total 4500 gals. acid thru perf.  
11,012-11,045.

IP: F 458 BO plus 1.16 B BS plus 6 BW  
24 hrs. thru 1/2" ch. Gas Vol. 16,810  
CFCPD, COR 37.1 Grav. 44.3 Corr.  
Spd 9-20-51 Completed 1-19-51

5-1/2" Csg. @ 10,860.  
Trt. open hole 10,860-10,966 with 6000 acid.  
IP: F 403 BO 24 hrs. thru 3/4" ch. on input  
Gas. Grav. 44.8 Corr.  
Spd 9-4-51 Completed 12-15-51

5-1/2" Csg. @ 11,040, PB 11,026 (-6776).  
Perf. 11,010-26.  
Trtd. 250 gals. acid.  
IP: F 159 BO plus 23 BW 24 hrs. thru 1" ch.  
on gas lift.  
Spd 4-21-50 Completed 8-16-50

5-1/2" Csg. @ 11,000 PB 9033 (-4784)  
Perf. Csg. 9005-9033 with 112 holes.  
Trt. perf. with 500 gals. acid.  
IP: F 846 BO plus 1 B BS thru 20/64" ch.  
Gas Vol. 1,312,000 CFCPD, COR 1550-1,  
Grav. 42.5 Corr.  
Spd 2-10-51 Completed 5-11-51

PAGE #5 BAGLEY FIELD - LEA COUNTY, NEW MEXICO

| <u>WELL &amp; No.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u> | <u>DEVONIAN</u>   | <u>COMPLETION</u>                                                                                                                                                                                                                                                                                                                 |
|-----------------------|---------------------|-------------------------|-----------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                     |                         | <u>CAP</u>      |                   |                                                                                                                                                                                                                                                                                                                                   |
| MATHERS #1            | 10,860 (-6606)      | 10,876 (-6622)          | 16'             | TD 10,964 (-6710) | No PB                                                                                                                                                                                                                                                                                                                             |
|                       |                     |                         |                 |                   | 5-1/2" Csg. @ 10934.<br>Ttr. open hole 10,934-10,964 with 500 gals. acid.<br>Perf. 5-1/2" Csg. 10,920-10,935 with 60 jet shots.<br>Ttr. open hole & perf. with 2000 gals. acid.<br>IP: F 361 BO plus 1/2 B BS plus 7 B AW 24 hrs. thru 1/2" ch. Gas Vol. 12,000 CFCD, COR 31-1 Grav. 45.6 Corr.<br>Spud 10-26-50 Completed 2-8-51 |
| MATHERS #1-A          | 10,922 (-6665)      | 10,940 (-6683)          | 18'             | TD 10,995 (-6738) | PB 10,966 (-6709)                                                                                                                                                                                                                                                                                                                 |
|                       |                     |                         |                 |                   | 5-1/2" Csg. @ 10,995 PB 10,966<br>Perf. 10,938-10,966<br>Ttr. perf. with 2500 gals. acid.<br>IP: F 384 BO 24 hrs. thru 3/4" ch. COR 35-1, Grav. 45.0 Corr.<br>Spud 6-23-51 Completed 9-7-51                                                                                                                                       |
| MATHERS #2-A          | 10,982 (-6722)      | 11,002 (-6742)          | 20'             | TD 11,030 (6770)  | No PB                                                                                                                                                                                                                                                                                                                             |
|                       |                     |                         |                 |                   | 5-1/2" Csg. @ 11,000.<br>Wash open hole 11,000-11,030 w/500 acid.<br>IP: F 1342 BOFD thru 1/2" ch. (Based on 8 hr. test)<br>COR 18-1, Grav. 44.5 Corr.<br>Spud 10-10-51 Completed 1-19-52                                                                                                                                         |
| STANONS #1            | 10,952 (-6699)      | 11,025 (-6772)          | 73'             | TD 11,046 (-6793) | PB 9040 (-4787)                                                                                                                                                                                                                                                                                                                   |
|                       |                     |                         |                 |                   | 5-1/2" Csg. @ 9450, PB 9040 (-4787).<br>Perf. 9000-9040.<br>Ttr. with 4500 gals. acid.<br>IP: F 292 BO plus 172 BW 24 hrs. thru 1/2" ch., COR 1847-1, Grav. 45.3 Corr.<br>Spud 12-9-49 Completed 4-28-50                                                                                                                          |
| TUNBER #1             | 11,000 (-6746)      | 11,096 (-6842)          | 96'             | TD 11,115 (-6861) | No PB                                                                                                                                                                                                                                                                                                                             |
|                       |                     |                         |                 |                   | TD 11,115 (-6861) D & A<br>Spud 4-15-51 Completed 7-14-51                                                                                                                                                                                                                                                                         |

PAGE #6 - BAGLEY FIELD - IEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u> | <u>DEVONIAN COMPLETION</u>        |                                                                                                                                                                                                           |
|-----------------------|---------------------|-------------------------|-----------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                     | <u>Est.</u>             | <u>CAP</u>      |                                   |                                                                                                                                                                                                           |
| SHELL #1-A            | 11,040 (-6766)      | 11,062 (-6788)          | 22'             | TD 11,075 (-6801) FB 9815 (-5541) | 5-1/2" Csg. @ 9890 FB 9815.<br>Perf. Csg. 9805-9815.<br>Trt. perf. w/2000 acid.<br>IP: F 11,000,000 CFCPD thru 24/64" ch., SI<br>Spud 6-29-51 Completed 10-26-51                                          |
| T&P #1-B              | 10,722 (-6479)      | 10,795 (-6552)          | 73'             | TD 10,914 (-6671) No PB           | 7-5/8" Csg. @ 10,765.<br>Trt. open hole 10,765-10,914 with 5500 gal. acid.<br>IP: F 2460 BOPD thru open 2-1/2" tbg. (based on<br>2 hr. test) COR 12-1, Grav. 46.6 Corr.<br>Spud 6-30-49 Completed 12-9-49 |
| T&P #2-B              |                     |                         |                 |                                   | Drilling<br>Spud 10-30-51. Comp. 5-30-52 See Completion last Sheet.                                                                                                                                       |
| T&P #1-C              | 10,563 (-6317)      | 10,660 (-6414)          | 97'             | TD 10,822 (-6576) No PB           | 5-1/2" Csg. @ 10,650.<br>Wash open hole 10,650-10,822 with 500 gals. acid.<br>IP: F 1566 BOPD thru 3/8" ch. (Based on<br>4 hr. test, COR 29-1, Grav. 46.1 Corr.<br>Spud 12-2-49 Completed 4-21-50         |
| T&P #2-C              | 10,739 (-6491)      | 10,760 (-6512)          | 21'             | TD 10,949 (-6701) No PB           | 7" Csg. @ 10,778.<br>Wash open hole 10,778-10,949 with 500 gals. acid.<br>IP: F 1104 BO 24 hrs. thru 16/64" ch. COR<br>27-1, Grav. 45.7.<br>Spud 2-17-50 Completed 6-9-50                                 |

PAGE #7 - BAGLEY FIELD - LEA COUNTY, NEW MEXICO

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN<br/>CAP</u> | <u>DEVONIAN<br/>COMPLETION</u>      |
|-----------------------|---------------------|-------------------------|-------------------------|-------------------------------------|
| T&F #3-C              | 10,848 (-6594)      | 10,920 (-6666)          | 72'                     | TD 11,034 (-6780) PB 10,994 (-6740) |
| T&F #4-C              | 10,916 (-6662)      | 10,960 (-6706)          | 44'                     | TD 11,019 (-6765) PB 9034 (-4780)   |

5-1/2" Csg. @ 11,034', PB 10,994 (-6740)  
 Perf. 10,907-994. Trt. 500 gals. acid.  
 IP: F 1080 BO 24 hrs. thru 24/64" ch.  
 GOR 25-1, Grav. 45.6 Corr.  
 Spud 4-22-50 Completed 8-18-50

7" Csg. 11,018 PB 9034.  
 Perf. 8986-9034.  
 Wash perf. w/500 acid.  
 Trt. perf w/1500 acid.  
 IP: F 312 BOPD thru 1/2" ch. (Based on 15  
 hr test) GOR 1809-1, Grav. 48.0 Corr.  
 Spud 6-21-51 Completed 11-9-51



SAGEY FIELD - LEA COUNTY, NEW MEXICO:

| <u>WELL &amp; NO.</u> | <u>TOP DEVONIAN</u> | <u>TOP DEVONIAN PAY</u> | <u>DEVONIAN</u><br><u>CAP</u> | <u>DEVONIAN COMPLETION</u>          |
|-----------------------|---------------------|-------------------------|-------------------------------|-------------------------------------|
| ANERADA<br>BTW #1     | 10,826 (-6568)      | 10,880 (-6622)          | 54'                           | TD 10,970 (-6712) No PB             |
| T&P #2-B              | 10,860 (-6617)      | 10,952 (-6709)          | 92'                           | TD 11,033 (-6790) PB 10,987 (-6744) |

5 1/2" Csg. @ 10,850  
Acidized open hole 10,850-10,970 w/500 gal.  
IP: F 696 BOFD thru 1 1/4" ch. (Based on 12  
hr. test of 348 BO) GOR 18-1  
Gravity 46.0 Corr. Spud 3-4-52  
Comp 6-4-52

5 1/2" Csg. @ 11,033, PB 10,987 (-6744)  
Perf. 10,936-10,987 w/204 holes.  
Acidized perf. w/total 2500 gal. acid.  
IP: F 360 BO/24 hrs. thru 1 1/4" ch., GOR  
34-1, Gravity 46.0 Corr.  
Spud 10-30-51  
Comp 5-30-52

2 Copies Core Analysis

Candle #2

Ex 26

249

**CORE LABORATORIES, INC.**

1000 North Central Expressway  
Midland, Texas 79701

Telephone (512) 835-1111

**Amerida Petroleum Corporation**  
Box 312  
Midland, Texas

Attention: Mr. J. G. Blackwood

**Subject: Special Core Analysis**  
Gaudle No. 2 Well  
Gaudle Area  
Lea County, New Mexico

Gentlemen:

The Gaudle No. 2 well was cored using diamond coring equipment and water base mud. The cores were logged at the well site by a representative of Core Laboratories, Inc., and all cores judged worthy of analysis were quick-frozen and transported to the Midland laboratory.

The Mississippian formation was cored from 10,927 to 11,012 feet. Six samples, representing the zone from 10,963 to 10,973 feet, were selected from this interval for analysis. These samples consisted of a dense limestone possessing slight oil stain. The porosity and permeability in this zone were quite low and, consequently, production possibilities are slight.

The Devonian formation was cored from 11,012 to 11,077 feet with one hundred per cent core recovery being obtained in this interval. All recovered core was analyzed, except the interval 11,012 to 11,015 feet which consisted of dense dolomite, and the interval 11,062.5 to 11,064.5 feet which was too broken for accurate analysis. The entire cored interval is considered to be oil productive with permeability.

Results of these analyses are presented in tabular and graphical form on the enclosed Coregram. A summary of core analysis data for the section from 11,012 to 11,077 feet is attached herewith for your information.

by test operation and visual inspection of the device. Also, it is noted  
on page one of the report.

We found that we have been diligent in the proper evaluation and de-  
velopment of this device.

Very truly yours,

Ray Laboratories, Inc.

*R. S. Symons*  
R. S. Symons  
Chief Engineer

RSB:aa



# CONCLUSIONS AND CALCULATION OF RECOVERABLE OIL

## CORE SUMMARY

|                                                                                              |                        |  |  |  |  |
|----------------------------------------------------------------------------------------------|------------------------|--|--|--|--|
| FORMATION NAME                                                                               | DAVIDSON               |  |  |  |  |
| DEPTH, FEET                                                                                  | 1,016.511.071.0        |  |  |  |  |
| % CORE RECOVERY                                                                              | 100                    |  |  |  |  |
| FEET OF PERMEABLE PRODUCTIVE FORMATION RECOVERED                                             | 58.7                   |  |  |  |  |
| AVERAGE PERMEABILITY MILLIDARCYs                                                             | Mean: 26<br>90%: 6.7   |  |  |  |  |
| CAPACITY - AVERAGE PERMEABILITY X FEET PRODUCTIVE FORMATION                                  | Mean: 1526<br>90%: 398 |  |  |  |  |
| AVERAGE POROSITY, PERCENT                                                                    | 3.7                    |  |  |  |  |
| AVERAGE RESIDUAL OIL SATURATION, % PORE SPACE                                                | 17.7                   |  |  |  |  |
| GRAVITY OF OIL, A.P.I.                                                                       | 45                     |  |  |  |  |
| AVERAGE TOTAL WATER SATURATION, % PORE SPACE                                                 | 65.5                   |  |  |  |  |
| AVERAGE CALCULATED CONDENSATE WATER SATURATION, % PORE SPACE                                 | 65.5                   |  |  |  |  |
| SOLUTION GAS-OIL RATIO, CUBIC FEET PER BARREL (1)                                            | 300                    |  |  |  |  |
| FORMATION VOLUME FACTOR - VOLUME THAT ONE BARREL OF STOCK TANK OIL OCCUPIES IN RESERVOIR (1) | 1.21                   |  |  |  |  |

## CALCULATED RECOVERABLE OIL

|                                                           |    |  |  |  |  |
|-----------------------------------------------------------|----|--|--|--|--|
| BY NATURAL OR GAS EXPANSION, BBLs. PER ACRE FOOT (2)      | 14 |  |  |  |  |
| INCREASE DUE TO WATER DRIVE, BBLs. PER ACRE FOOT          | 17 |  |  |  |  |
| TOTAL AFTER COMPLETE WATER DRIVE, BBLs. PER ACRE FOOT (3) | 31 |  |  |  |  |

## NOTE:

- (1) REFER TO ATTACHED LETTER
- (2) REDUCTION IN PRESSURE FROM estimated SATURATION PRESSURE TO ATMOSPHERIC PRESSURE
- (3) AFTER REDUCTION FROM ORIGINAL RESERVOIR PRESSURE TO ZERO POUNDS PER SQUARE INCH
- (4) RESERVOIR PRESSURE MAINTAINED BY WATER DRIVE, estimated ORIGINAL SATURATION PRESSURE
- (5) NO ESTIMATE TO BE MADE

These results are based on the data furnished and the assumptions made. They are not to be used as a basis for any other calculations or conclusions. The results are subject to change as more data becomes available.

R. S. G. (11)  
R. S. G. (11)







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2 Copies Core Analysis  
State BTJ<sup>#</sup>1

Ex 29

249

Amerada Petroleum Corporation  
Box 312  
Midland, Texas

Attention: Mr. J. C. Blackwood

Subject: Special Core Analysis  
BTJ-1 Well  
Caudle Area  
Lea County, New Mexico

Gentlemen:

The BTJ-1 well was cored using diamond coring equipment and water base mud. The cores were logged, sampled and quick-frozen by a representative of Core Laboratories, Inc., and transported to the Midland laboratory for analysis.

The BTJ-1 well was cored from 10,925 to 11,140 feet, with one hundred per cent core recovery being obtained in this interval. The Devonian formation was tentatively topped at 10,991 feet; however, only the cores from 11,099 to 11,140 feet were judged worthy of analysis.

Results of these analyses are presented in tabular and graphical form on the enclosed core logs. Estimates of recoverable oil by gas expansion and water displacement of oil cores are presented on page one.

We trust these data will assist in the proper evaluation and development of this reservoir.

Very truly yours,

Core Laboratories, Inc.

R. S. Bryant (S)

R. S. Bryant

Director, Midland

RSB:ao



# CONCRETE SUMMARY AND CALCULATED RECOVERABLE OIL

## CORE SUMMARY

|                                                                                            |                     |  |  |  |
|--------------------------------------------------------------------------------------------|---------------------|--|--|--|
| FORMATION NAME                                                                             | DAVOLI              |  |  |  |
| DEPTH, FEET                                                                                | DISC 99.0 - 140.0   |  |  |  |
| % CORE RECOVERY                                                                            | 100                 |  |  |  |
| FEET OF PERMEABLE PRODUCTIVE FORMATION RECOVERED                                           | 41.0                |  |  |  |
| AVERAGE PERMEABILITY MILLIDARCY                                                            | Mean 3.0<br>90% 1.3 |  |  |  |
| CAPACITY — AVERAGE PERMEABILITY X FEET PRODUCTIVE FORMATION                                | Mean 93<br>90% 40   |  |  |  |
| AVERAGE POROSITY, PERCENT                                                                  | 4.4                 |  |  |  |
| AVERAGE RESIDUAL OIL SATURATION, % PORE SPACE                                              | 11.9                |  |  |  |
| GRAVITY OF OIL, A.P.I.                                                                     | 45                  |  |  |  |
| AVERAGE TOTAL WATER SATURATION, % PORE SPACE                                               | 51.6                |  |  |  |
| AVERAGE CALCULATED CONNATE WATER SATURATION, % PORE SPACE                                  | 51.6                |  |  |  |
| SOLUTION GAS-OIL RATIO, CUBIC FEET PER BARREL (1)                                          | 300                 |  |  |  |
| FORMATION VOLUME FACTOR—VOLUME THAT ONE BARREL OF STOCK TANK OIL OCCUPIES IN RESERVOIR (1) | 1.21                |  |  |  |

## CALCULATED RECOVERABLE OIL

Production data must show complete isolation of each section. Directional position of well, total permeability of all zones and thickness of well should be determined.

|                                                          |    |  |  |  |
|----------------------------------------------------------|----|--|--|--|
| BY NATURAL OR GAS EXPANSION, BBL. PER ACRE FOOT (2)      | 24 |  |  |  |
| INCREASE DUE TO WATER DRIVE, BBL. PER ACRE FOOT          | 72 |  |  |  |
| TOTAL AFTER COMPLETE WATER DRIVE, BBL. PER ACRE FOOT (3) | 96 |  |  |  |

Core Laboratories, Inc.

## NOTE:

- (\*) REFER TO ATTACHED LETTER.
- (1) REDUCTION IN PRESSURE FROM ESTIMATED SATURATION PRESSURE TO ATMOSPHERIC PRESSURE.
- (2) AFTER REDUCTION FROM ORIGINAL RESERVOIR PRESSURE TO ZERO POUNDS PER SQUARE INCH.
- (3) RESERVOIR PRESSURE MAINTAINED BY WATER DRIVE ON ABOVE ESTIMATED ORIGINAL SATURATION PRESSURE.
- (4) NO ESTIMATE FOR GAS PHASE RESERVOIRS.

These analyses and calculations are based on observation and materials supplied by the client to whom, and for whom analysis and calculations are made. The client is responsible for the accuracy of the data furnished to the laboratory. The laboratory is not responsible for the accuracy of the data furnished to the client.

*RS Bynum* (PS)  
R. S. Bynum

|          |                                |                    |                                    |             |                          |
|----------|--------------------------------|--------------------|------------------------------------|-------------|--------------------------|
| COMPANY  | AMERICAN PETROLEUM CORPORATION | DATE ON            | 1-7-51                             | FILE NO.    | ML-112 S                 |
| WELL     | RTU-1                          | DATE OFF           | 1-22-51                            | ENGNS.      | WILLIAMSON, GILS         |
| FIELD    | GAUDER AREA                    | FORMATION AS NOTED | T                                  | ELEV.       |                          |
| COUNTY   | DEA                            | STATE              | NEW MEXICO                         | CDRLG. FLD. | WATER BASE MUD           |
| LOCATION |                                | REMARKS            | SAMPLED BY CORE LABORATORIES, INC. |             |                          |
|          |                                |                    |                                    |             | CORNS - CHRISTENSEN DIA. |

## Special Analysis

## CORE REPORT

**SAND  
SHALE**

**LINCOLN**  
**DOES IT**

THE UNIVERSITY OF CHICAGO  
CHICAGO, ILLINOIS 60637  
U.S.A.  
TEL: (708) 937-3200  
FAX: (708) 937-3200

**CONCLUSIONS**



# CHRY

**THE**

1990-1991

FROM WATER  $O^{\vee}-O$

70 30 20 10 0

80 60 40 20 0

[illegible]



Table with 10 columns and 20 rows. The table contains a grid of data, likely representing a calendar or a schedule. The first column contains dates from 1 to 31. The subsequent columns contain various entries, possibly names or events, corresponding to each date.

Table with 10 columns and 20 rows. The table contains a grid of data, likely representing a calendar or a schedule. The first column contains dates from 1 to 31. The subsequent columns contain various entries, possibly names or events, corresponding to each date.









2 Copies Core Analysis  
Mathers #1

Ex 25  
249

Amerada Petroleum Corporation  
Box 312  
Midland, Texas  
Attention: Mr. J. D. Blackwood

Special Core Analysis  
Mather No. 1 Well  
Baker, Hightower Field  
Baker County, New Mexico

Gentlemen:

The Mather No. 1 well was cored using diamond coring equipment and water base mud. The cores were logged, sampled and quick-frozen at the well site by a representative of Core Laboratories, Inc. and transported to the Midland laboratory for analysis.

The Devonian formation was cored from 10,879 to 10,965 feet with one hundred per cent core recovery being obtained in this interval. The cores were analyzed by special whole core methods to take into account the effects of vugs and fractures upon the physical characteristics of the cores. The entire cored interval is considered to be oil productive where permeable.

Results of these analyses are presented in tabular and graphical form on the enclosed Coregraph. Estimates of recoverable oil by gas expansion and water drive mechanisms of recovery are given on page one.

We trust that we have been of assistance in the proper evaluation and development of this reservoir.

Very truly yours,

Core Laboratories, Inc.

*R. J. Byrum*  
R. J. Byrum, (S.M.)  
District Engineer

# CORE SUMMARY AND CALCULATED RECOVERABLE OIL

## CORE SUMMARY

|                                                                                              |                       |  |  |  |
|----------------------------------------------------------------------------------------------|-----------------------|--|--|--|
| FORMATION NAME                                                                               | Devonian              |  |  |  |
| DEPTH, FEET                                                                                  | 10,879.0-10,965.0     |  |  |  |
| % CORE RECOVERY                                                                              | 100                   |  |  |  |
| FEET OF PERMEABLE, PRODUCTIVE FORMATION RECOVERED                                            | 85.0                  |  |  |  |
| AVERAGE PERMEABILITY MILLIDARCYs                                                             | Max: 21<br>90°: 5.5   |  |  |  |
| CAPACITY — AVERAGE PERMEABILITY X FEET PRODUCTIVE FORMATION                                  | Max: 1785<br>90°: 468 |  |  |  |
| AVERAGE POROSITY, PERCENT                                                                    | 4.4                   |  |  |  |
| AVERAGE RESIDUAL OIL SATURATION, % PORE SPACE                                                | 13.4                  |  |  |  |
| GRAVITY OF OIL, °A.P.I.                                                                      | 46                    |  |  |  |
| AVERAGE TOTAL WATER SATURATION, % PORE SPACE                                                 | 53.0                  |  |  |  |
| AVERAGE CALCULATED CONNATE WATER SATURATION, % PORE SPACE                                    | 53.0                  |  |  |  |
| SOLUTION GAS-OIL RATIO, CUBIC FEET PER BARREL (1)                                            | 30                    |  |  |  |
| FORMATION VOLUME FACTOR — VOLUME THAT ONE BARREL OF STOCK TANK OIL OCCUPIES IN RESERVOIR (1) | 1.05                  |  |  |  |

## CALCULATED RECOVERABLE OIL

|                                                           |     |  |  |  |
|-----------------------------------------------------------|-----|--|--|--|
| BY NATURAL OR GAS EXPANSION, BBLs. PER ACRE FOOT (2)      | 27  |  |  |  |
| INCREASE DUE TO WATER DRIVE, BBLs. PER ACRE FOOT          | 80  |  |  |  |
| TOTAL AFTER COMPLETE WATER DRIVE, BBLs. PER ACRE FOOT (3) | 107 |  |  |  |

COPELAND ASSOCIATES, INC.

## NOTE:

- (1) REFER TO ATTACHED LETTER.
- (2) REDUCTION IN PRESSURE FROM estimated SATURATION PRESSURE TO ATMOSPHERIC PRESSURE.
- (3) AFTER REDUCTION FROM ORIGINAL RESERVOIR PRESSURE TO ZERO PRESSURE PER BARREL INCH.
- (4) RESERVOIR PRESSURE MAINTAINED BY WATER DRIVE OR FROM estimated ORIGINAL SATURATION PRESSURE.
- (5) NO ESTIMATE FOR GAS PHASE RESERVOIRS.

These analyses were made by the following persons: (1) R. S. Bynum, (2) R. S. Bynum, (3) R. S. Bynum, (4) R. S. Bynum, (5) R. S. Bynum.

R. S. Bynum  
R. S. Bynum (Signature)



CORE LABORATORIES, INC.

Petroleum Research Engineering

COMPANY AMERICA PETROLEUM CORPORATION DATE ON 1-27-51 FILE NO. 102108 S  
 WELL MATHIAS No. 1 DATE OFF 2-7-51 ENGRS. J. H. C. J. M. V. B.  
 FIELD BAGL. Y. H. D. T. O. H. E. R FORMATION DEVONIAN ELEV. 12511 D.E.  
 COUNTY L.A. STATE NEW MEXICO DRG. FLD. WATER BASE MID CORES CHRISTENSEN DIA.  
 LOCATION REMARKS SAMPLED BY CORE LABORATORIES, INC.

# Special Analysis CORE REPORT

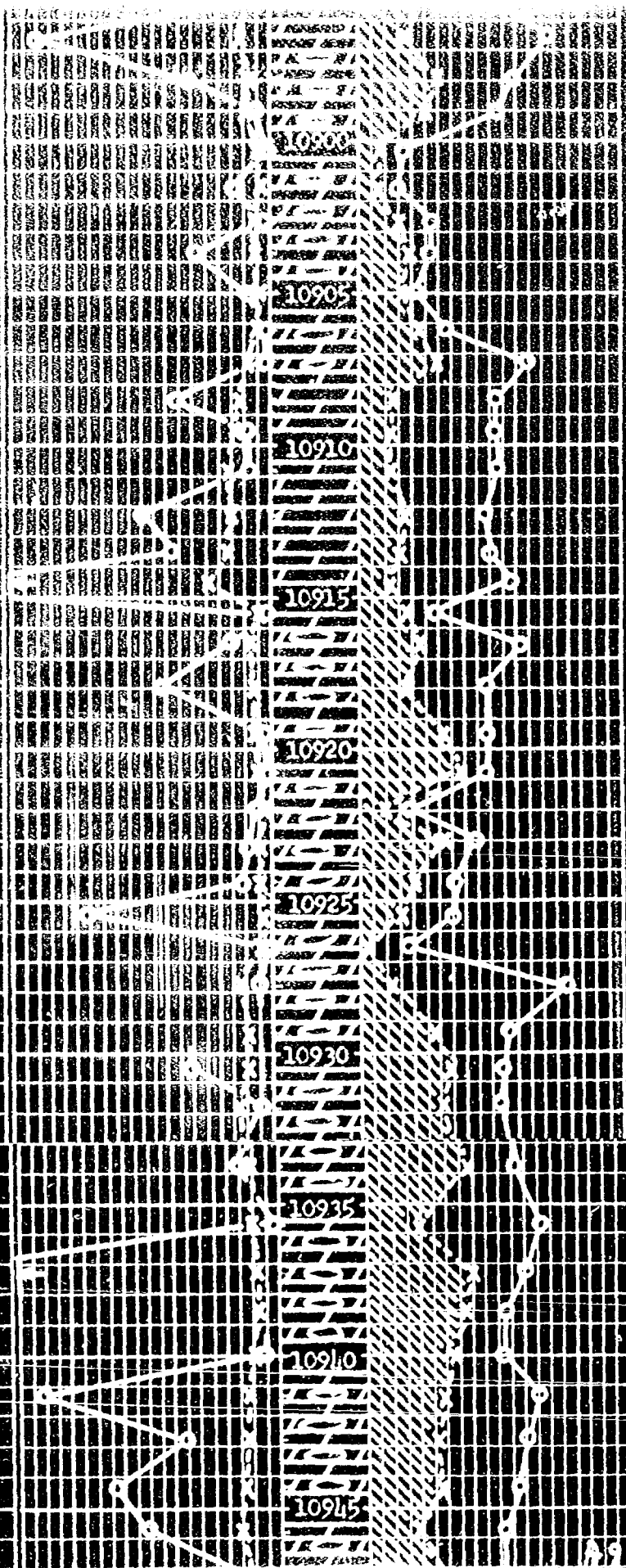
SAND ☐ LIMESTONE ☐ CONGLOMERATE ☐ CHERT ☐  
 SHALE ☐ DOLOMITE ☐

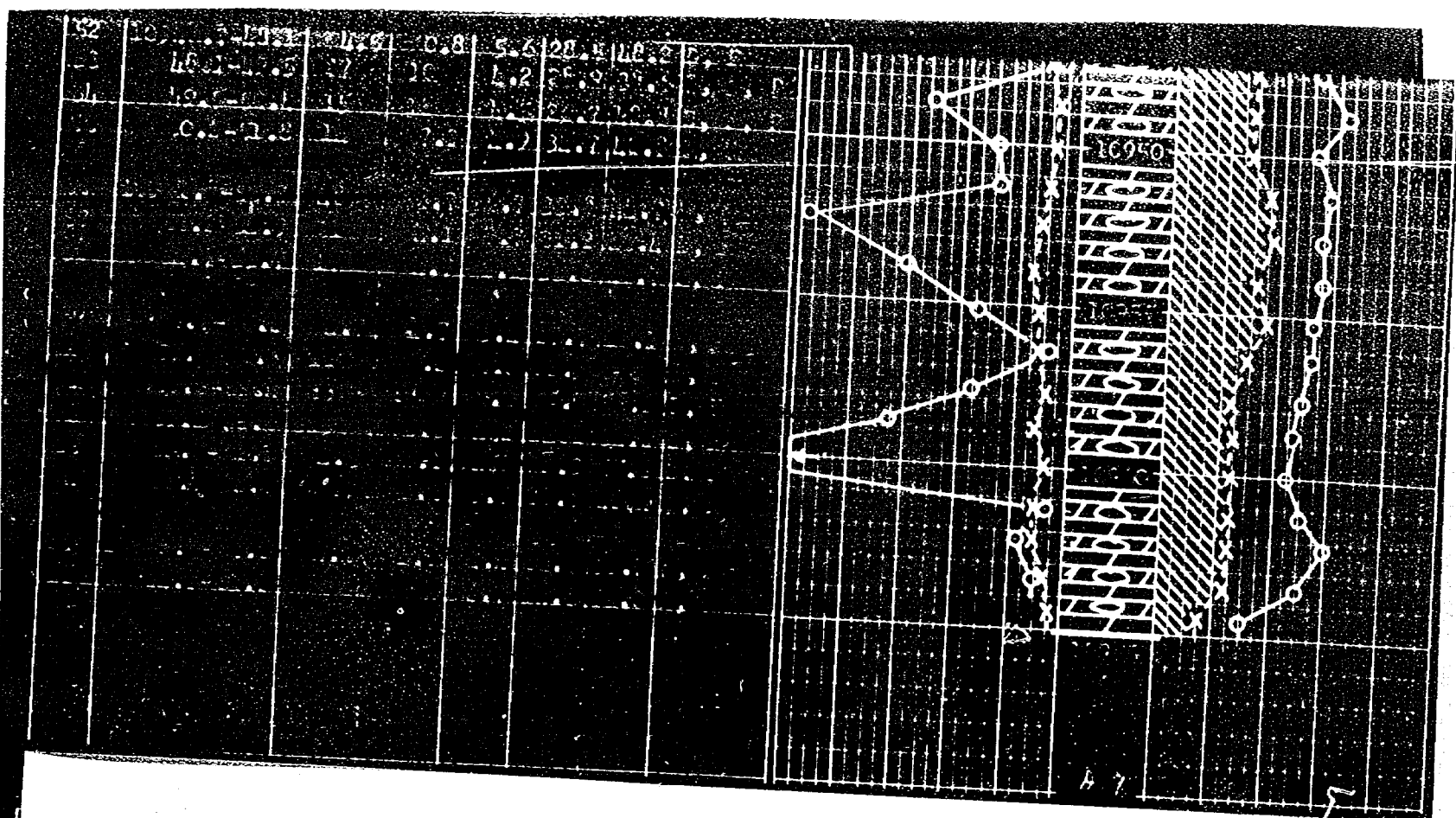
Unauthorized removal or alteration of data on this report and without written consent of the company is prohibited. This report is the property of the company and is loaned to the user for their use only. It is to be returned to the company when requested. The user is to be held responsible for any loss or damage to the report. The user is to be held responsible for any alteration or removal of data from the report.

PERMEABILITY Barrel 0-0 TOTAL WATER 0-0  
 10 20 30 40 50 60 70 80 90

| SAMPLE NUMBER | DEPTH FEET   | PERMEABILITY |       | F   | VISUAL |       | PERMEABILITY |       | TOTAL WATER |       |
|---------------|--------------|--------------|-------|-----|--------|-------|--------------|-------|-------------|-------|
|               |              | BAR          | WATER |     | BAR    | WATER | BAR          | WATER | BAR         | WATER |
|               | D - DENSE    |              |       |     |        |       |              |       |             |       |
|               | F - FRACTURE |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
| 1             | 10879.0-80.6 | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   | 10879       |       |
| 2             | 80.6-81.9    | 0.8          | 0.1   | 2.8 | 15.0   | 70.7  | 0.1          | 0.1   | 10880       |       |
|               |              |              |       |     |        |       |              |       |             |       |
| 3             | 10881.2-83.3 | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   |             |       |
| 4             | 83.3-84.6    | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
| 5             | 10884.9-86.8 | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   | 10885       |       |
| 6             | 86.8-87.8    | 0.8          | 0.1   | 2.8 | 15.0   | 70.7  | 0.1          | 0.1   |             |       |
|               |              |              |       |     |        |       |              |       |             |       |
| 7             | 10887.8-89.0 | 2.0          | 0.7   | 1.9 | 15.8   | 73.7  | 0.1          | 0.1   |             |       |
| 8             | 89.0-90.3    | 2.5          | 2.1   | 2.0 | 15.0   | 70.0  | 0.1          | 0.1   |             |       |
| 9             | 90.3-91.8    | 0.1          | 0.1   | 2.5 | 21.0   | 72.0  | 0.1          | 0.1   | 10890       |       |
|               |              |              |       |     |        |       |              |       |             |       |
| 10            | 10891.8-93.5 | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   |             |       |
| 11            | 93.5-94.6    | 0.1          | 0.1   | 1.8 | 16.7   | 78.0  | 0.1          | 0.1   |             |       |

|    |              |     |     |     |      |      |      |      |
|----|--------------|-----|-----|-----|------|------|------|------|
| 12 | 10892.0-20.0 | 1.5 | 1.7 | 2.0 | 10.4 | 10.4 | 10.4 | 10.4 |
| 13 | 20.0-21.4    | 0.6 | 0.1 | 2.3 | 38.3 | 32.3 | 31.2 | 31.2 |
| 14 | 21.4-22.4    | 2.5 | 4.0 | 2.2 | 9.1  | 81.8 | 81.8 | 81.8 |
| 15 | 22.4-23.8    | 3.5 | 3.3 | 2.5 | 32.0 | 56.0 | 56.0 | 56.0 |
| 16 | 23.8-24.9    | 6.5 | 2.5 | 2.5 | 20.0 | 64.0 | 64.0 | 64.0 |
| 17 | 24.9-26.0    | 36  | 2.1 | 2.0 | 15.0 | 65.0 | 65.0 | 65.0 |
| 18 | 26.0-27.0    | 0.7 | 0.5 | 1.2 | 7.5  | 83.3 | 83.3 | 83.3 |
| 19 | 27.0-28.6    | 2.6 | 2.3 | 6.8 | 10.3 | 20.6 | 20.6 | 20.6 |
| 20 | 10928.8-30.0 | *   | *   | 5.1 | 27.5 | 13.2 | 13.2 | 13.2 |
| 21 | 10930.0-31.2 | 16  | 1.6 | 5.0 | 34.0 | 16.0 | 16.0 | 16.0 |
| 22 | 31.2-32.8    | 2.2 | 2.0 | 6.8 | 30.9 | 17.1 | 17.1 | 17.1 |
| 23 | 10932.8-34.9 | 7.1 | 5.4 | 5.5 | 38.3 | 13.7 | 13.7 | 13.7 |
| 24 | 10934.9-36.5 | 0.4 | 0.2 | 5.6 | 12.7 | 34.0 | 34.0 | 34.0 |
| 25 | 10936.5-38.0 | 58  | 5.5 | 1.8 | 39.6 | 39.6 | 39.6 | 39.6 |
| 26 | 38.0-39.3    | *   | *   | 1.1 | 36.6 | 16.4 | 16.4 | 16.4 |
| 27 | 39.3-40.6    | 1.3 | 3.8 | 1.1 | 31.7 | 18.8 | 18.8 | 18.8 |
| 28 | 10940.6-42.1 | 16  | 1.3 | 6.3 | 28.6 | 34.8 | 34.8 | 34.8 |
| 29 | 42.1-43.5    | 18  | 1.2 | 6.3 | 25.4 | 39.7 | 39.7 | 39.7 |
| 30 | 43.5-44.8    | 32  | 2.8 | 7.0 | 27.1 | 42.8 | 42.8 | 42.8 |
| 31 | 10944.8-46.7 | 26  | 1.5 | 7.3 | 19.2 | 47.9 | 47.9 | 47.9 |





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. 249  
(Consolidated with Case No. 315)  
Order No. R-69-D

THE MATTER OF THE APPLICATION OF  
THE OIL CONSERVATION COMMISSION  
UPON ITS OWN MOTION FOR AN ORDER  
DIRECTED TO THE OPERATORS IN THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO, TO SHOW CAUSE  
WHY SAID POOL SHOULD NOT BE PLACED  
ON 40-ACRE SPACING WITH ALLOWABLE  
ADJUSTMENT, UPON EXPIRATION OF  
TEMPORARY ORDER.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing on May 19, 1954, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 30th day of <sup>June</sup> July, 1954, the Commission, a quorum being present, having considered the testimony adduced and exhibits received at said hearings, and being fully advised in the premises,

FINDS:

- (1) That due notice having been given and proper service had upon the operators in said pool as required by law, the Commission has jurisdiction of this cause.
- (2) That originally the Commission issued Temporary Order R-69, effective May 1, 1951, to and including May 1, 1952, authorizing the development and production of the Bagley-Siluro-Devonian Pool on an 80-acre spacing pattern with 80-acre proration units.
- (3) That thereafter and prior to the expiration of Order R-69, the Commission after due notice and hearing issued Order R-69-A, which granted an extension of Order R-69, as modified, for a period of one year from and after May 1, 1952.
- (4) That thereafter and prior to the expiration of Order R-69-A as modified by Order R-69-B, the Commission after due notice and hearing issued Order R-69-C, effective June 1, 1953, to and including June 1, 1954, which authorized the development and production of the Bagley-Siluro-Devonian Pool on an 80-acre spacing pattern with 80-acre proration units.
- (5) That for the prevention of waste and in the interests of conservation, the provisions of said Commission Temporary Order R-69-C, as hereinafter modified and set forth, should be made permanent.



IT IS THEREFORE ORDERED:

(a) That 80-acre spacing of wells and establishment of 80-acre proration units in the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, described as:

Township 11 South, Range 33 East, NMPM  
All Section 34; NW/4 and S/2 Section 35

Township 12 South, Range 33 East, NMPM  
N/2 and SE/4 of Section 3; all of Section 2;  
E/2 NW/4 and N/2 NE/4 of Section 11

be, and the same is hereby authorized; such proration units to consist of the E/2 and the W/2 respectively of each governmental survey quarter section therein and the well location thereon shall be in the center (permissive tolerance 150 feet) of the northwest and southeast quarter sections thereof.

PROVIDED, HOWEVER, that the following described units do, and shall constitute permissible exceptions to the spacing and proration unit plan aforesaid:

Township 11 South, Range 33 East, NMPM  
N/2 NW/4 of Section 35; S/2 NW/4 of Section 35

Township 12 South, Range 33 East, NMPM  
N/2 NW/4 of Section 3; S/2 NW/4 of Section 3;  
N/2 NE/4 of Section 2; SW/4 NE/4 and NW/4 SE/4 of  
Section 2; SE/4 NE/4 and NE/4 SE/4 of Section 2;  
S/2 SE/4 of Section 2;  
N/2 NE/4 of Section 11

(b) That no well shall be drilled or produced in said pool except it be in conformity with the spacing and proration unit pattern hereinabove authorized unless, after notice and hearing, a special order of authorization is had and obtained from the Commission.

(c) That should any well be drilled off-pattern, under authority of any special order, then, and in that event, the same shall be entitled only to an allowable equal to that of a standard 40-acre proration unit with deep pool adaptation as provided by Commission rules. Nothing contained in this order shall be construed as requiring by the Commission the drilling of any wells at any location.

IT IS FURTHER ORDERED: That the Bagley-Siluro-Devonian Pool and the 80-acre proration units therein, hereby established and confirmed, be and the same hereby are granted an allowable equal to the top allowable for wells in the Bagley-Siluro-Devonian depth range, calculated by the use of the 80-acre proportional factor as provided for in Rule 505 of the Rules and Regulations of this Commission, together with the acreage factor, if any there be;

PROVIDED HOWEVER, that no well in such pool will be assigned an allowable greater than the amount of oil produced on official gas-oil ratio tests during a 24-hour period in compliance with Rule 301 of the said Rules and Regulations.



IT IS FURTHER ORDERED:

(a) That each operator in said pool shall take or cause to be taken bottom-hole pressure tests of each producing well operated by him in said pool during the months of July of each calendar year; the results of such tests shall be tabulated, and reflect the pressure of each well; the same shall be filed on or before the 5th day of August, of each calendar year, with the Commission at Santa Fe, New Mexico (with copy <sup>to</sup> Hobbs office); it is further provided, that such bottom-hole pressure tests shall be taken in conformity with the requirements of Rule 302 of the Commission's Rules and Regulations as revised.

This order supersedes all previous temporary orders and interlocutory orders heretofore issued in this case.

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER, Member

R. R. SPURRIER, Secretary and Member

S E A L

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

May 27, 1953

C  
O  
P  
Y

Mr. Jack Campbell, Attorney  
Atwood, Malone and Campbell  
ROSWELL, NEW MEXICO

Dear Mr. Campbell:

RE: OCC Case 249

In behalf of your client, Texas Pacific Coal and Oil Company,  
we send you signed copy of Order R-60-0 issued in Case 249,  
which was taken under advisement by the Commission after its  
presentation at the May 19 hearing.

Very truly yours,

W. B. Macey  
Chief Engineer

WBM:nr

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

May 27, 1953

Mr. Oliver Seth  
Seth and Montgomery  
Box 828  
Santa Fe N M

Dear Mr. Seth:

RE: OCO Case 249

We enclose for your information and transmittal to your client, Amerada Petroleum Corporation, official copy of Order R-69-C issued in Case 249, which was taken under advisement by the Commission after its presentation at the May 19 hearing.

Very truly yours,

W. B. Macey  
Chief Engineer

WBM:nr

C  
O  
P  
Y

BEFORE THE  
OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

April 16, 1953

-----  
Case 249: Application of Commission upon its own motion for an order directed to the operators in the Bagley-Siluro-Devonian Pool to show cause why pool shall not be placed on a 40-acre spacing pattern with allowable adjustment (in conformance with provisions of Order R-69-A) which was a temporary order.

MR. SPURRIER: Is there anyone to be heard in this case? I have a letter from Atwood, Malone & Campbell signed by Jack Campbell. "As attorneys for Texas-Pacific Coal & Oil Company, we hereby request a postponement of the above-entitled case from the hearing on April 16th to the regular hearing of May 19. We have consulted with Amerada and have been advised that they concur in our request for a postponement. The existing order covering this field expires by its term May 1st, 1953 and we will make the appropriate application for an emergency order covering the period from May 1st to the date of the May hearing. Mr. Campbell of this office who has handled this matter from its inception is unable to attend the April hearing of the Commission."

Mr. SETH: Oliver Seth appearing on behalf of Amerada. We are the other interested party in the pool and we would like to concur in the request that it be continued until the May hearing. We would like to suggest to the Commission that the emergency order continue the present order until the case is disposed of rather than just until the hearing date.

VOICE: If the Commission please. If the order expires by its own terms May 1st, in order to continue the case you continue the order to show cause and to enter an emergency order that is effective only fifteen days or until May 19th - - - it's better to have an interlocutory to maintain the status quo as to the rights that were originally contained in the order until May 19th rather than have an emergency order.

MR. SETH: We have no particular interest in the mechanics of the thing. Just so the present sixty-nine days are continued until the case is disposed of.

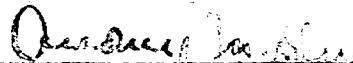
MR. SPURRIER: Is there objection to Amerada's motion for continuance? If, not, we will continue the case until the May hearing. And the Commission

will enter an appropriate order to maintain the status quo. The next case on the docket is Case 407.

STATE OF NEW MEXICO    )  
                              )  
COUNTY OF SANTA FE    ) ss.

I hereby certify that the foregoing and attached transcript of hearing in Case 249 before the Oil Conservation Commission on April 16, 1953, at Santa Fe is a true record of the same to the best of my knowledge, skill and ability.

DATED at Santa Fe, this 18th day of April, 1953.

  
Audrey M. Henrickson

My commission expires September 20, 1955.

ATWOOD, MALONE & CAMPBELL  
LAWYERS

JEFF D. ATWOOD  
ROSS L. MALONE  
JACK N. CAMPBELL  
CHARLES F. MALONE

ROSWELL PETROLEUM BUILDING  
ROSWELL, NEW MEXICO

April 13, 1953

OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

RECEIVED  
APR 16 1953

Mr. R. R. Spurrier  
Secretary and Director  
Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Re: Case No. 249

Dear Mr. Spurrier:

As attorneys for Texas Pacific Coal & Oil Company we hereby request a postponement of the above styled case from the hearing on April 16, 1953, to the regular monthly hearing of May 19, 1953. We have consulted with Amerada and have been advised that they concur in our request for a postponement.

The existing order covering this field expires by its terms May 1, 1953, and we will make the appropriate application for an emergency order covering the period from May 1 to the date of the May hearing.

Mr. Campbell of this office, who has handled this matter from its inception, is unable to attend the April hearing of the Commission.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

By: *Jack M. Campbell*

JMC:hl

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

April 22, 1953

Mr. Jack M. Campbell  
Atwood, Malone and Campbell  
Roswell Petroleum Building  
ROSWELL, NEW MEXICO

Dear Sir:

We attach copy of Order R-69-B, the interlocutory order issued by the Commission for interim effect until Case 249 (consolidated with Case 315) can be heard on May 19. We will appreciate your advising your client of this issuance.

Very truly yours,

For R. R. Spurrier

RRS:mr

C  
O  
P  
Y

J. O. SETH  
A. K. MONTGOMERY  
OLIVER SETH  
WM. FEDERICI  
JUSTIN T. REID

SETH AND MONTGOMERY  
ATTORNEYS AND COUNSELORS AT LAW  
111 SAN FRANCISCO ST.  
SANTA FE, NEW MEXICO

March 23, 1953

OIL CONSERVATION COMMISSION  
State Capitol Building  
Santa Fe, New Mexico

Gentlemen:

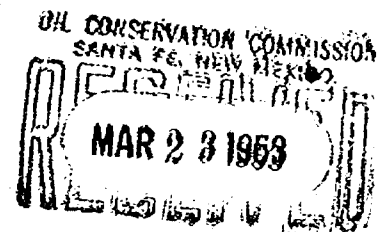
Re: Amerada Petroleum Corporation  
Case No. 249 - Order R-69.

Enclosed herewith is application of Amerada  
Petroleum Corporation for extension of Order R-69.  
It will be appreciated if you can set this  
order down for the April 1953 hearing.

Very truly yours,

*Oliver Seth*

OS:f  
Enc.





*Exhibit 100  
in Reading Room*

UNIVERSITY MICROFILMS  
SERIALS ACQUISITION  
300 N. ZEEB RD.  
ANN ARBOR, MI 48106-1500

Total allocation (may) 5614 bbls  
Amerada - 4029 (71.8)  
T.P. - 1585 (28.2%)

Under new provision Total Pool 4639  
Amerada 3359 72.4  
T.P. 1280 27.6

Total Est. acreage in Pool  
Considered Productive - 1840 acres  
(above - 6770 contours)

T.P.'s Productive Acreage 400 (21.7%)

TEXAS PACIFIC COAL AND OIL COMPANY

PRODUCTIVITY INDEX

New Mexico State "D" a/c-] Well No. 1

Bagley Siluro/Devonian Field

Lea County,  
New Mexico

EXHIBIT

2

*Texas-Pacific*

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- II Pressures at choke Settings
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SECTION I

STATIC PRESSURE TESTS

**TEXAS PACIFIC COAL AND OIL COMPANY**  
PRODUCTION DEPARTMENT

**SUBSURFACE PRESSURE SURVEY**

|                                              |  |  |                             |                              |                           |
|----------------------------------------------|--|--|-----------------------------|------------------------------|---------------------------|
| FIELD<br><b>Bagley- Siluro/Devonian</b>      |  |  |                             | DATE<br><b>13 Nov., 1952</b> |                           |
| LEASE<br><b>S New Mexico State "D" s/c-1</b> |  |  |                             | WELL NO.<br><b>1</b>         | ELEVATION<br><b>4236'</b> |
| WELL STATUS<br>FLOWING                       |  |  | SHUT IN<br>HOURS <b>100</b> |                              |                           |

| DEPTH                                                                                                                                                | PRESSURE | INTERVAL<br>DIFFERENCE | GRADIENT<br>LBS./FT. | REMARKS                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------|----------------------|--------------------------------------------------------------|
| 0                                                                                                                                                    | 495      |                        |                      | TUBING PRESS. <b>495</b>                                     |
| 6000                                                                                                                                                 | 2535     | 2040                   | 0.340                | CASING PRESS. <b>500</b>                                     |
| 8000                                                                                                                                                 | 3220     | 685                    | 0.343                | FLUID TOP. <b>Tubing Full</b>                                |
| 10000                                                                                                                                                | 3890     | 670                    | 0.335                | WATER TOP. <b>-</b>                                          |
| 10536                                                                                                                                                | 4070     | 180                    | 0.336                | TEMP. @ <b>10,936'</b> <b>179° F.</b>                        |
| 10736                                                                                                                                                | 4133     | 63                     | 0.315                | LAST TEST DATE <b>5 Nov., 1952</b>                           |
| 10936                                                                                                                                                | 4212     | 79                     | 0.396*               | PRESS. LAST TEST <b>4215</b>                                 |
| * High gradient 10,736' to 10,936' may indicate water; however, since gradient between 10,536' to 10,736' is low, this indication is not conclusive. |          |                        |                      | PRESS. CHANGE SINCE LAST TEST<br>@ <b>6700'</b> <b>DATUM</b> |
|                                                                                                                                                      |          |                        |                      | PLANE IS <b>-3</b>                                           |
|                                                                                                                                                      |          |                        |                      | INSTRUMENT NO. <b>1000</b>                                   |
|                                                                                                                                                      |          |                        |                      | RUN BY <b>Miller &amp; Smith</b>                             |

| RATE OF FLOW<br>OIL, B/D | GAS-OIL RATIO<br>CU. FT./BBL. | STABILIZED FLOWING<br>PRESSURE @ _____ FT. | PRODUCTIVITY INDEX<br>(24 HOURS) |
|--------------------------|-------------------------------|--------------------------------------------|----------------------------------|
|                          |                               |                                            |                                  |
|                          |                               |                                            |                                  |
|                          |                               |                                            |                                  |
|                          |                               |                                            |                                  |
|                          |                               |                                            |                                  |
|                          |                               |                                            |                                  |

|                                             |                                                       |                              |
|---------------------------------------------|-------------------------------------------------------|------------------------------|
| OIL PRODUCED SINCE LAST TEST<br><b>none</b> | ACCUMULATIVE OIL PRODUCED<br>BBLs.<br><b>New Well</b> | DATE<br><b>13 Nov., 1952</b> |
|---------------------------------------------|-------------------------------------------------------|------------------------------|

SECTION II

PRESSURES AT CHOKE SETTINGS

TEXAS PACIFIC COAL & OIL COMPANY

Bagley Siluro-Devonian Field  
New Mexico State "D" Acct. 1 No. 1  
November 11, 1952

| <u>Time</u> | <u>Operation</u>         | <u>Pressure @ 10936'</u> |
|-------------|--------------------------|--------------------------|
| 10:10 A.M.  | Static                   | 4212 P.S.I.              |
| 10:15 "     | Opened on 14/64" choke   |                          |
| 11:15 "     | Flowing on 14/64" choke  | 4058 "                   |
| 12:15 P.M.  | "                        | 4055 "                   |
| 1:15 "      | "                        | 4080 "                   |
| 2:15 "      | "                        | 4099 "                   |
| 3:15 "      | "                        | 4104 "                   |
| 4:15 "      | "                        | 4113 "                   |
| 4:30 "      | Start off Bottom         |                          |
| 5:00 "      | Changed to 20/64" Choke  |                          |
| 5:15 "      | Flowing on 20/64" Choke  | 4003 "                   |
| 6:15 "      | "                        | 4005 "                   |
| 7:15 "      | "                        | 4000 "                   |
| 8:15 "      | "                        | 4003 "                   |
| 9:15 "      | "                        | 4012 "                   |
| 10:15 "     | "                        | 4012 "                   |
| 11:15 "     | "                        | 4012 "                   |
| 12:15 A.M.  | "                        | 4012 "                   |
| 1:15 "      | "                        | 4013 "                   |
| 2:15 "      | "                        | 4013 "                   |
| 3:15 "      | "                        | 4003 "                   |
| 4:15 "      | "                        | 4001 "                   |
| 5:15 "      | "                        | 4000 "                   |
| 6:15 "      | "                        | 4012 "                   |
| 7:15 "      | "                        | 4012 "                   |
| 7:45 "      | "                        | 4012 "                   |
| 8:00 "      | Started off Bottom       |                          |
| 8:15 "      | Changed to 26/64 " Choke |                          |
| 8:30 "      | Flowing on 26/64" Choke  | 3823 "                   |
| 9:30 "      | "                        | 3815 "                   |
| 10:30 "     | "                        | 3813 "                   |
| 11:30 "     | "                        | 3820 "                   |
| 12:30 P.M.  | "                        | 3813 "                   |
| 1:30 "      | "                        | 3805 "                   |
| 2:00 "      | "                        | 3805 "                   |
| 2:05 "      | Start off Bottom         |                          |
| 4:00 "      | Changed to 32/64" Choke  |                          |
| 4:15 "      | Flowing on 32/64" Choke  | 3610 "                   |
| 4:20 "      | "                        | 3790 "                   |
| 4:25 "      | "                        | 3775 "                   |
| 4:30 "      | "                        | 3775 "                   |
| 4:35 "      | "                        | 3777 "                   |
| 4:40 "      | "                        | 3777 "                   |
| 4:45 "      | "                        | 3770 "                   |
| 4:50 "      | "                        | 3770 "                   |
| 4:55 "      | "                        | 3770 "                   |
| 5:00 "      | "                        | 3768 "                   |
| 5:05 "      | "                        | 3768 "                   |



| <u>Time</u> | <u>Operation</u>        | <u>Pressure @ 10936'</u> |
|-------------|-------------------------|--------------------------|
| 5:10 P.M.   | Flowing on 32/64" Choke | 3768 P.S.I.              |
| 5:15 "      | "                       | 3770 "                   |
| 5:20 "      | "                       | 3770 "                   |
| 5:25 "      | "                       | 3770 "                   |
| 5:30 "      | "                       | 3770 "                   |
| 5:35 "      | "                       | 3758 "                   |
| 5:40 "      | "                       | 3758 "                   |
| 5:45 "      | "                       | 3758 "                   |
| 5:50 "      | Start off Bottom        |                          |
| 7:05 "      | Shut In                 | 3770 "                   |
| 7:06 "      | "                       | 3818 "                   |
| 7:07 "      | "                       | 3855 "                   |
| 7:08 "      | "                       | 4024 "                   |
| 7:09 "      | "                       | 4165 "                   |
| 7:10 "      | "                       | 4168 "                   |
| 7:15 "      | "                       | 4175 "                   |
| 7:20 "      | "                       | 4175 "                   |
| 7:25 "      | "                       | 4180 "                   |
| 7:30 "      | "                       | 4180 "                   |
| 7:35 "      | "                       | 4180 "                   |
| 7:40 "      | "                       | 4194 "                   |
| 7:45 "      | "                       | 4194 "                   |
| 7:50 "      | "                       | 4194 "                   |
| 7:55 "      | "                       | 4194 "                   |
| 8:00 "      | "                       | 4194 "                   |
| 8:05 "      | "                       | 4194 "                   |
| 8:10 "      | "                       | 4194 "                   |
| 8:15 "      | "                       | 4194 "                   |
| 8:20 "      | "                       | 4203 "                   |
| 8:25 "      | "                       | 4203 "                   |
| 8:30 "      | "                       | 4203 "                   |
| 8:35 "      | "                       | 4203 "                   |
| 8:40 "      | "                       | 4203 "                   |
| 8:45 "      | "                       | 4203 "                   |
| 8:50 "      | "                       | 4203 "                   |
| 8:55 "      | "                       | 4203 "                   |
| 10:00 "     | "                       | 4205 "                   |
| 10:05 "     | "                       | 4208 "                   |
| 10:10 "     | "                       | 4210 "                   |
| 10:45 "     | "                       | 4220 "                   |
| 11:45 "     | "                       | 4220 "                   |
| 12:45 A.M.  | "                       | 4220 "                   |
| 1:45 "      | "                       | 4220 "                   |
| 2:45 "      | "                       | 4223 "                   |
| 3:45 "      | "                       | 4228 "                   |
| 4:45 "      | "                       | 4228 "                   |
| 5:45 "      | "                       | 4228 "                   |
| 6:45 "      | "                       | 4228 "                   |
| 7:45 "      | "                       | 4220 "                   |
| 8:30 "      | End Of Test             | 4220 "                   |

SECTION III

TABULATED RESULTS

TEXAS PACIFIC COAL & OIL COMPANY

Bagley Siluro-Devonian Field  
New Mexico State "D" Acct. 1 No. 1  
November 11, 1952

| Length of Test  | Choke Size | Oil<br>Average<br>Bbls/hr | Oil<br>(24hrs) | Gas MCF<br>(24 hrs) | B.S. & W.  | BHP @<br>10946' | Stabilized     |                | Gas-Oil Ratio | P.I.  |
|-----------------|------------|---------------------------|----------------|---------------------|------------|-----------------|----------------|----------------|---------------|-------|
|                 |            |                           |                |                     |            |                 | Tong<br>Press. | Cang<br>Press. |               |       |
| 4 hrs.          | 14/64"     | 3.5                       | 84             | 4.66                | 0.1 of 1 % | 4085            | 170            | 375            | 55.5-1        | 0.785 |
| 14 hrs. 45 min. | 20/64"     | 9.04                      | 217            | 4.55                | "          | 4012            | 55             | 300            | 21.5-1        | 1.086 |
| 5 hrs. 30 min.  | 26/64"     | 25.5                      | 612            | 8.10                | "          | 3805            | 22             | 60             | 13.3-1        | 1.506 |
| 1 hr. 30 min.   | 32/64"     | 29.0                      | 696            | 19.00               | "          | 3758            | 15             | 20             | 27.3-1        | 1.520 |

SECTION IV

GRAPH #1 BBLs. OF PROD. vs. STATIC PRESSURE

4200

o---STATIC PRESSURE-4212

4100

4000

3900

3800

PRESSURE AT 10,936'

TEXAS PACIFIC COAL & OIL CO.  
NEW MEXICO STATE "D" o/c-1 No.1  
BAGLEY - SILURO / DEVONIAN FIELD  
NOVEMBER 13, 1952

PRODUCTION IN HUNDREDS OF BARRELS

0

1

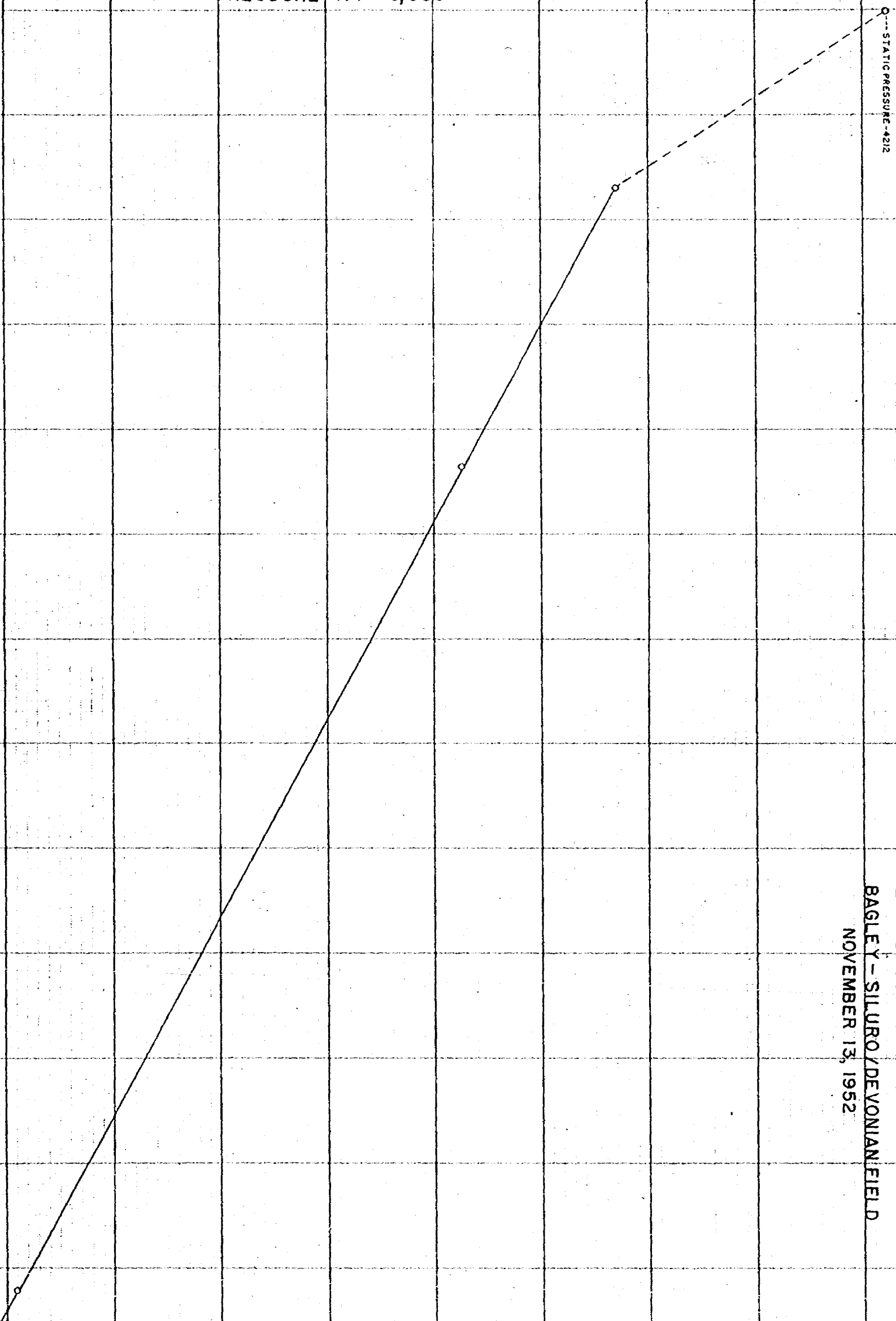
2

3

4

5

6



SECTION V

GRAPH #2 TIME vs. STATIC PRESSURES

SECTION V

GRAPH #2 TIME vs. STATIC PRESSURES

Bagley - Siluro/Devonian Field  
 Pressure History of Two Texas Pacific Coal and Oil Company Shut-in Wells  
 Datum -6700

|                       | 1952     |  | February |                 | March    |                 | April    |                 | Drop<br>B. H. P. | Time<br>Period |
|-----------------------|----------|--|----------|-----------------|----------|-----------------|----------|-----------------|------------------|----------------|
|                       | November |  | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in |                  |                |
| T. P. State "B" #3(a) |          |  |          |                 |          |                 |          |                 |                  |                |
|                       |          |  | 4190     | 82 days         | 4125     | 109 days        | 4118     | 142 days        | 65               | Feb to March   |
| T. P. State "D" #1(b) |          |  | 4214     | 84 days         | 4185     | 111 days        | 4180     | 144 days        | 30               | Nov to March   |
|                       |          |  | 4215     | 80 hours        |          |                 |          |                 |                  |                |
| Field Average         |          |  | 4134     | 53 hours        | 4125     | 48 to 72 hours  |          |                 | 9                | Nov to March   |

- (a) This well has been shut in since completion (11/16/52).  
 (b) This well produced 1000 barrels of test oil during a productivity index test on 11/13/52 and has been shut in since that date.

EXHIBIT /

1000 = Product



Bagley - Siluro/Devonian Field  
Pressure History of Two Texas Pacific Coal and Oil Company Shut-in Wells  
Datum -6700

|                       | 1952     |          | February |                 | March    |                 | April    |                 | Drop<br>B. H. P. | Time<br>Period |
|-----------------------|----------|----------|----------|-----------------|----------|-----------------|----------|-----------------|------------------|----------------|
|                       | November |          | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in |                  |                |
| T. P. State "B" #3(a) |          |          | 4190     | 82 days         | 4125     | 109 days        | 4118     | 142 days        | 65               | Feb to March   |
| T. P. State "D" #1(b) | 4215     | 80 hours | 4214     | 84 days         | 4185     | 111 days        | 4180     | 144 days        | 30               | Nov to March   |
| Field Average         | 4134     | 53 hours |          |                 | 4125     | 48 to 72 hours  |          |                 | 9                | Nov to March   |

- (a) This well has been shut in since completion (11/16/52).
- (b) This well produced 1000 barrels of test oil during a productivity index test on 11/13/52 and has been shut in since that date.

Bagley - Siluro/Devonian Field  
Pressure History of Two Texas Pacific Coal and Oil Company Shut-in Wells  
Datum -6700

|                       | 1952     |                 | February |                 | March    |                 | April    |                 | Drop<br>B. H. P. | Time<br>Period |
|-----------------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|------------------|----------------|
|                       | S. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in |                  |                |
| T. P. State "B" #3(a) |          |                 | 4190     | 82 days         | 4125     | 109 days        | 4118     | 142 days        | 65               | Feb to March   |
| T. P. State "D" #1(b) | 4215     | 80 hours        | 4214     | 84 days         | 4185     | 111 days        | 4180     | 144 days        | 30               | Nov to March   |
| Field Average         | 4234     | 53 hours        |          |                 | 4125     | 48 to 72 hours  |          |                 | 9                | Nov to March   |

(a) This well has been shut in since completion (11/16/52).

(b) This well produced 1000 barrels of test oil during a productivity index test on 11/13/52 and has been shut in since that date.

Begley - Siluro/Devonian Field  
Pressure History of Two Texas Pacific Coal and Oil Company Shut-in Wells  
Datum -5700

|                   | 1952     |                 | February |                 | March    |                 | April    |                 | Drop<br>B. H. P. | Time<br>Period |
|-------------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|------------------|----------------|
|                   | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in | B. H. P. | Time<br>Shut in |                  |                |
| T. P. State #3(a) |          |                 | 4190     | 82 days         | 4125     | 109 days        | 4118     | 142 days        | 65               | Feb to March   |
| T. P. State #1(b) | 4215     | 80 hours        | 4214     | 84 days         | 4185     | 111 days        | 4180     | 144 days        | 30               | Nov to March   |
| Field Average     | 4134     | 53 hours        |          |                 | 4125     | 48 to 72 hours  |          |                 | 9                | Nov to March   |

- (a) This well has been shut in since completion (11/16/52).
- (b) This well produced 1000 barrels of test oil during a productivity index test on 11/13/52 and has been shut in since that date.

OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

RECEIVED  
MAY 22 1951

BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO

CASE NO. 249

April 24, 1951

OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

FEB 25 1952

E. E. GREESON  
COURT REPORTER  
UNITED STATES COURT HOUSE  
TELEPHONE 9-0879 2-1547  
ALBUQUERQUE, NEW MEXICO

BEFORE THE  
OIL CONSERVATION COMMISSION  
April 24, 1951

-----

Case 249: The application of Amerada Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising SE/4 sec. 34, S/2 sec. 35, SW/4 sec. 36, T.11 S, R.33 E; and W/2 sec. 1, all sec. 2, E/2 sec. 3, E/2 sec. 10, all sec. 11, W/2 sec. 12, T.12 S, R.33 E continued to April 24.

(Mr. Graham reads the notice of publication.)

MR. HINKLE: Members of the Commission, for the purpose of the record, my name is Clarence Hinkle, member of the firm of Hervey, Dow and Hinkle and appearing here on behalf of the Amerada Petroleum Corporation.

Before proceeding with the evidence in case 249, I would like to make a brief statement relating mostly to the facts and circumstances which have preceded the filing of this application by the Amerada Petroleum Corporation for a temporary spacing order of the year in the Bagley field.

In the Fall of 1949, an application was made by the Amerada Petroleum Corporation to the Commission to establish 80-acre proration units for the uniform spacing of wells and for the purpose of fixing the allowable in the Bagley-Siluro-Devonian pool in Lea County.

BEFORE THE  
OIL CONSERVATION COMMISSION  
April 24, 1951

- - - - -

Case 249: The application of Amerada Petroleum Corporation for a temporary order establishing proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool, comprising SE/4 sec. 34, S/2 sec. 35, SW/4 sec. 36, T.11 S, R.33 E; and W/2 sec. 1, all sec. 2, E/2 sec. 3, E/2 sec. 10, all sec. 11, W/2 sec. 12, T.12 S, R.33 E continued to April 24.

(Mr. Graham reads the notice of publication.)

MR. HINKLE: Members of the Commission, for the purpose of the record, my name is Clarence Hinkle, member of the firm of Hervey, Dow and Hinkle and appearing here on behalf of the Amerada Petroleum Corporation.

Before proceeding with the evidence in case 249, I would like to make a brief statement relating mostly to the facts and circumstances which have preceded the filing of this application by the Amerada Petroleum Corporation for a temporary spacing order of the year in the Bagley field.

In the Fall of 1949, an application was made by the Amerada Petroleum Corporation to the Commission to establish 80-acre proration units for the uniform spacing of wells and for the purpose of fixing the allowable in the Bagley-Siluro-Devonian pool in Lea County.

A protest to this application was filed by the Texas Pacific Coal and Oil Company. The hearing was held before the Commission on December 20, 1949, and thereafter an order was entered by the Commission on January 23, 1950 denying the application of the Amerada. In the order denying the application the Commission made the following findings:

"The evidence is insufficient to prove that the proposed plan of spacing would avoid the drilling of unnecessary wells, secure the greatest ultimate recovery from the pool or protect correlative rights.

"The evidence is insufficient to prove that one well drilled on each 80-acre tract would efficiently drain the recoverable oil from the pool."

After making these findings, the Commission in the order stated, "The application of Amerada Petroleum Corporation is denied."

An appeal was taken by the Amerada to the District Court of Lea County. After the case had been docketed, the attorneys for the protestant, The Texas Pacific Coal and Oil Company requested that the Court hold a pre-trial conference for the purpose of considering the nature and scope of review by the Court of the order appealed from, including the question of what evidence may be presented when the appeal is heard.

After the pre-trial conference was held the Court made certain findings in the form of a pre-trial order. Among other things the Court found that the Court was without power to substitute its own independent judgment for that of the Commission as reflected in the order complained of. It also found that the nature and scope of the review in the case would be confined generally to the validity of the order and specifically to (a) the power of the Commission to enter the order complained of, (b) the existence of substantial evidence before the Commission supporting the order complained of and (c) the reasonableness of the order.

After the pre-trial order was entered on December 27, 1950, the Amerada voluntarily dismissed its appeal with prejudice.

The Amerada is now before the Commission on a new petition for a temporary order of one year to permit the development in the Bagley field to proceed on an 80-acre basis. As previously stated the order entered by the Commission in Connection with the original application was based primarily on there being insufficient evidence. At the time that order was entered only five Devonian wells had been drilled in the area. One of these was a dry hole. Since the order was entered, there have been 13 additional wells drilled, ten of which are producers. In all, there have been 18 wells



now drilled to the Devonian formation.

Because of the additional wells which have been drilled since the original order was entered and the information which has been accumulated by production experience, we believe that there is a change of circumstances and condition which did not exist at the time of the original application being filed.

We now feel that the evidence available will show beyond a reasonable doubt that one well will drain 80-acres and that under the present conditions it is in the interest of conservation and the prevention of waste that the field be developed on an 80-acre spacing unit.

MR. KELLOUGH: My name is Booth Kellough. I represent the Amerada Petroleum Corporation.

(Witnesses sworn.)

(Recess.)

MR. KELLOUGH: In order that there may be no misunderstanding, we wish to make it clear at the outset that we are asking by our application for a temporary order for one year and the evidence which we are introducing today is in support of our temporary application. In that connection, do you have anything further Mr. Adair that you wish to admit.

MR. ADAIR: If the Commission please, when this matter first came up before the Commission in December, 1949, we

did not feel that there was sufficient data available from the reservoir to justify a permanent 80-acre spacing order. Although there have been many wells drilled, some ten wells drilled and completed as producing wells since that time. We still feel that there is not sufficient evidence available for a permanent 80-acre spacing order. However, we do not object to the temporary order advocated and requested by Amerada.

So that the record will be clear and so that we can shorten this hearing may we all have an understanding that the evidence presented here is only in support of a one year order which will automatically expire at the end of that year unless after further hearing it is continued in effect.

I believe we can shorten the cross examination of the witnesses and avoid a good deal of legal argument.

MR. FOSTER: Mr. Chairman.

MR. SPURRIER: Mr. Foster.

MR. FOSTER: I am E. H. Foster with Phillips Petroleum Company. We originally supported the application of Amerada for 80-acre spacing and a permanent basis and we want the record to reflect that we are still supporting their application for their order on a temporary basis.

MR. KELLOUGH: I wish to say that Mr. Adair's statement is in accordance with our understanding.

J O H N   A .   V E E D E R,  
having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Please state your name?

A John Veeder.

Q Where do you live?

A Midland, Texas.

Q By whom are you employed?

A Amerada.

Q In what capacity?

A District geologist.

Q How long have you been the district geologist?

A Approximately six months.

Q You have testified previously before this Commission in your capacity as geologist?

A That is right.

MR. KELLOUGH: Are the qualifications of this witness acceptable to the Commission?

MR. SPURRIER: They are.

(Marked Amerada Exhibit No. 1, Case 249.)

Q I hand you what has been marked Amerada Exhibit No. 1 and ask you to state what that is?

A This is a map of the Bagley Oil field?

Q Does that - excuse me.

A I will, go ahead

Q Does that show the name of the leases and the locations of wells?

A That is right. It shows the Devonian producers and also the Penrose pay producers. The Devonian producers are the large circles and the pay producers are the small circles.

Q Does that map also show the spacing pattern proposed for any future wells?

A That's right.

Q It shows the 80 -

A That's right, it shows the 80 acre spacing.

Q How is the spacing pattern indicated on this map?

A Spacing is 80 acre spacing with the wells located in the northeast and southwest of each quarter section.

Q Each quarter quarter section?

A Right.

Q The crosses on the map indicated a possible location under the pattern, is that correct?

A That's right.

Q On this Exhibit 1, you will also notice certain dotted lines surrounding proposed 80 acre units. Will you explain what is the purpose of putting the dotted lines on that map, what they represent?

A The dotted lines are the proration units which have been placed because of the different lease holds in the different units.

Q The arrangement of the proration units which has been requested is the east half and west half of each quarter section, is that right?

A That's right.

Q The dotted lines indicate those units which we are requesting exemptions be made because of property ownership?

A That's right.

Q Mr. Veeder, at the previous hearing of this matter on December 20, 1949, how many completed Devonian wells were there?

A There were four completed wells in the Devonian.

Q How many devonian dry holes?

A At that time there were no devonian dry holes.

Q At the present time how many completed Devonian wells are there in the Bagley Pool?

A There are 14 completed Devonian wells.

Q Amerada owns how many of that 14?

A Ten.

Q The other four are owned by Texas Pacific Coal and Oil Company, is that right?

A That's right.

Q How many dry holes have been drilled to the Devonian at the present time?

A Four dry holes in the Devonian.

Q How many drilling wells are there now?

A There are four drilling wells.

Q How many pay wells have been drilled in this Bagley field?

A There are a total of three pay wells.

Q And how many pay wells are now drilling?

A There are two pay wells now drilling.

Q Mr. Veeder do you have a schedule showing the production, the completion data of all the Devonian wells?

A That's right.

(Marked, "Amerada's Exhibit No. 2" for identification.)

Q I am handing you Amerada's Exhibit No. 2, will you please explain to the Commission the data which is carried on this exhibit?

A We have shown the total of 16 Devonian wells and started from left to right, The well number, the top of the Devonian with the subsea datum; the top of the Devonian pay with the subsea datum; the thickness on the Devonian cap, and the Devonian completion history.

Q And the Devonian completion history shows what?

A Well -

Q In general.

A Shows the spudding completion date total depth, <sup>casing</sup> ~~perforation~~ acid treatment; gas-oil ratio I. P. and gravity.

Q That has been tabulated as to all present Devonian wells?

A That's right.

MR. KELLOUGH: We offer Exhibit two.

MR. SPURRIER: It will be accepted.

(Marked, "Amerada's Exhibits 3 through 16", for identification.)

Q Mr. Veeder, I hand you Exhibits 3 to 16, inclusive, and ask you to state what these exhibits are.

A These are Schlumberger's. On the Schlumberger's we have indicated the top on the Devonian the total depth casing set perforation.

MR. KELLOUGH: We offer in evidence Exhibits 3 through 16.

MR. SPURRIER: They will be accepted.

Q Have you prepared a structural map?

Map, marked, "Amerada's Exhibit 17" for identification.)

Q I hand you what has been identified as Amerada's Exhibit No. 17, and ask you to state what that is?

A That is a map, contour map, on the subsea datum top of the Devonian contour interval, fifty feet.

Q How did you pick the top of the Devonian in the preparation of that map?

A The top of the Devonian was picked from Schlumberger's in all cases.

Q Have you prepared another structural map?

A That's right. We have a structural map on the subsea datum top of the Devonian pay.

(Map, marked as "Amerada's Exhibit No. 18, for identification.)

Q I hand you what has been marked as Exhibit 18, and ask you if this is the structural map on the top of the Devonian pay to which you referred?

A That is right. On top of the Devonian pay subsea datum.

Q How did you pick the top of the Devonian pay in the preparation of this exhibit 18?

A The top of the Devonian pay was picked by samples in cores.

Q Will you explain why you prepared two structure maps?

A Two structure maps were prepared because in the Bagley field we find we have a **divergence** of Devonian cap. The one well No. 2 Caudel, in the western limits of Bagley field which has only 7 feet of cap. Another well in the south end of Bagley field a dry hole Amerada No. 1 DBTJ. BTJ has a Devonian cap of 101 feet.

Q Also, will you refer to the Simmons well and show how that is located structurally on the two maps?

A On the Simmons, the top of the Devonian, the Simmons well is actually 45 feet higher than the No. 2 Caudel, which is a producer of the Devonian. The reason for the No. 2 Caudel, of course being a producer is the thinness of the Devonian cap.

Q This Devonian cap that you speak of is Devonian formation but is impervious and nonproductive, is that right?

A That's right, the cap is a cherty limestone in contrast to the formation below which is a cherty dolomite.

Q From the information which you have at this time, Mr. Veeder, do you have an opinion as to the probable productive limits of



the Bagley Pool?

A Yes, I have, using the structure map, the top of the Devonian pay, we have outlined an area in red which at this time we would interpret to be the productive limits of the Devonian Bagley field.

Q In other words, you have designated on Exhibit No. 1, by red lines what in your opinion is the productive limits of the Bagley Devonian Pool at this time?

A That's right.

MR. KELLOUGH: We wish to offer in evidence Exhibits 17 and 18.

MR. SPURRIER: They will be accepted.

MR. KELLOUGH: We wish also at this time to amend our application to conform to Mr. Veeder's testimony as to the probable productive limits. At the time we prepared our application, I believe that we requested that the spacing order cover slightly different land than has been designated by red on Exhibit No. 1, so we at this time move to amend our pleading to request the order which we are asking for to apply to the land indicated within the boundaries of the red line on Exhibit 1.

Q How many acres, Mr. Veeder, is there within the probable productive limits as you have designated?

A There are twenty-three hundred and twenty acres within the red line on the map.

Q Have you made an examination of the Schlumberger's on all wells in this pool?

A That's right.

Q Have you examined the samples from all wells?

A That's right.

Q And have you made a visual examination of the cores which have been taken from those wells that have been cored?

A That's right, all cores that were available.

Q How many wells have been cored, do you know?

A Amerada has cored four wells in the Devonian and I believe Texas Pacific has cored two.

Q Do you have with you samples of some cores?

A Yes, I have several samples of cores.

Q Let's have the reporter identify these.

(Marked Exhibits 19 through 23, for identification.)

Q Referring to Exhibit 19, state what well that core was taken from and what depth.

A I have three cores on Amerada BTC No. 3, the first core was from ten thousand ninety-three to seven hundred ninety-four.

Q What exhibit number is that that you are speaking of at this time?

A Exhibit 20.

Q Go ahead with the rest of them.

A This core shows the good vugular type porosity which we reported previously in the Devonian.

Q You are speaking of Exhibit No. 20?

A That's right.

Q Will you take each one of these cores, Mr. Veeder, and state what well they came from and what depth and then explain what the core shows from a visual examination of it?

A The next core is Exhibit 19 and it is also a core in the Amerada BTC No. 3, depth 10,927. This also shows good vuglar and fractured porosity. Next, this core is from the Amerada BTC No. 3, Exhibit 21. This is from a depth of 10,895 to 10,896. This also shows essential vuglar type porosity. Exhibit No. 22, from Amerada No. 1 BTJ, depth 11,124 to 11,125. This core shows essentially vuglar porosity. Exhibit 23 is the last core, it is from the Texas Pacific No. 2 State C, depth 10,898. This again shows good fractured and vuglar porosity.

Q Would you consider that these cores are representative of the formation?

A Yes, I would.

MR. KELLOUGH: We offer Exhibits 10 through 23, inclusive, in evidence.

MR. SPURRIER: They will be accepted.

Q Do you have an opinion, Mr. Veeder, as to the porosity and permeability of the Bagley reservoir?

A I would consider the porosity of the Bagley Devonian reservoir as good and also the permeability.

Q Would you say that there was connected porosity throughout the reservoir?

A I would say, yes.

Q Would you say there was continuous permeability?

A Yes.

Q Now, by that you mean uniform?

A No. That is continuous, that is continuous of void space between your pore zone and your formation, in your formation.

Q You would consider it as one connected pore zone?

A That's right.

Q In your opinion, Mr. Veeder, is the Bagley pool comparable to Jones Ranch pool in Texas and the Knolls pool in Lea County, New Mexico?

A That's right.

Q How does the porosity and permeability at Bagley compare to Knolls and Jones Ranch?

A I believe the porosity is comparable or better than the Knolls field and I also think it is better than the Jones Ranch.

Q Those two pools are being produced on 80 acre spacing?

A That's right.

MR. KELLOUGH: That is all.

MR. ADAIR: I have no questions.

MR. SPURRIER: Does anyone have any questions of this witness? If not, the witness may be excused.

(Witness excused.)

R. S. CHRISTIE,  
having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Will you please state your name?

A R. S. Christie.

Q Where do you live?

A Fort Worth, Texas.

Q By whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity?

A Division Petroleum Engineer.

Q How long have you been a petroleum engineer for the Amerada?

A Since 1929.

Q You previously testified before this Commission?

A Yes, sir.

MR. KELLOUGH: Are Mr. Christie's qualifications acceptable?

MR. SPURRIER: Yes, they are.

Q Have you prepared, under your direction and control, Mr. Christie, a production or pressure chart?

A Yes, sir.

(Marked Exhibit 24, for identification.)

Q Referring to Exhibit No. 24, will you please explain what that exhibit shows?

A Exhibit 24 shows the production data for the Bagley-Siluro-Devonian Pool.

Q On the left hand margin of Exhibit 24 are a series of figures. What do they represent?

A They represent the first monthly oil production, the number of wells the cumulative production and the bottom hole pressure.

Q Now, the exhibit has a staggered line running diagonally up the center of it. What does that represent?

A That represents the monthly production.

Q There is a curved line underneath that. What does that represent?

A The cumulative production.

Q Then, under that is a more or less staggered straight line. What does that represent?

A That is the monthly water production.

Q And, also, indicated there is the number of wells?

A Yes, sir.

Q And across the top of the exhibit is a rather straight line. What does that indicate?

A That represents the bottom hole pressure.

Q Now, in substance, Mr. Christie, what does that exhibit show?

A Well, in the first place, it shows the formal development by showing the number of wells completed which is on this graph shows 13. It shows the step up in the monthly production as the wells are completed and as of March of 1951, the monthly production was 91,922 barrels.

(Chairman Shepard returned to the room.)

Q That is the monthly production?

A Yes.

Q Does that exhibit show a small decline in pressure?

A Will you state that question again?

Q Does that exhibit show a relatively small decline in pressure?

A Yes, sir, it does.

Q What is the cumulative production data shown on that exhibit?

A The cumulative production through March 31, is 825,127 barrels. During that interval of production the bottom hole pressure has declined from 4285 pounds to 4258 pounds.

Q What is the gas-oil ratio average in the Bagley pool?

A Well, the average gas-oil ratio is 28 cubic feet per barrel.

Q What is the gravity of the oil?

A The gravity varies from 44 to 46 API.

Q Referring to Exhibit No. 24, is it your opinion as a petroleum engineer that considering the amount of oil that has been produced and the gas-oil ratio that there has been an unusually small pressure decline?

A Yes, sir, I believe so.

Q What does that indicate to you with reference to the type of pool this is?

A That indicates to me that we have a rather permeable reservoir with a very active water drive.

Q Have there been PI tests or productivity tests taken on the wells in this pool?

A Yes, sir, we have taken productivity index on practically every well we have completed in the field.

Q What do they indicate?

A They reflect the same condition as our static bottom hole pressures do. In other words, we have, for dolomite reservoir, a fairly high productive indexes. They vary from .82 barrels per pound drop, to 7.68 barrels per pound drop; Per 24 hour producing day.

Q Does that indicate good permeability?

A Well, the average would be a fair permeability. Of course, the lower productive indexes taken on one of the lower wells where the section is not as thick and the permeability is less in all probability.

MR. KELLOUGH: We offer in evidence Exhibit No. 24.

MR. SPURRIER: It will be accepted.

Q Mr. Christie, do you have with you any core analysis of wells in the Bagley pool that have been cored?

A Yes, sir.

MR. KELLOUGH: Reporter, please identify them..

(Marked Exhibits 25, 26 and 27, for identification.)

Q The core analysis that you referred to are marked Exhibits 25, 26, and 27?

A That's correct.

Q Will you please explain what conclusions are shown by these core analyses and what conclusions you have, identifying them by number.

A Exhibit 25 is a core analysis of Amerada Petroleum Corporation Matters number one. Matters No. 1 was cored from 10,679 feet to 10,965 feet. We had 100 per cent core recovery. The feet of permeable productive formation recovered was 85 feet. The average porosity by analyses was 4.4 per cent. The average permeability was 21 maximum, and 5.5 taken at 90 degrees. The solution of gas-oil ratio in this particular well was 30 cubic feet per barrel. This exhibit showed no sample but what had



some permeability. Any other questions on this particular one?

Q Have you referred now to all three of the core analyses?

A No, sir, I have just explained Exhibit 25 by its core analysis on Matters No. 1.

Q Exhibit 26 is a core analysis on Amerada Caudel No. 2. The well was cored from 11,016 to 11,077; 100 per cent recovery. The feet of permeable productive formation recovered was 58.7. The average permeability was 6.7 for the lower value and 26 for the maximum. The average porosity was 3.7 per cent. Exhibit 27 core analysis of Amerada State BTJ No. 1. This well was cored from 11,099 to 11,140, with 100 per cent recovery. Thirty-one feet of permeable productive formation recovered. The average permeability maximum three million darses and 1.3 million darses for the 90 degree minimum. The average porosity was 4.4 per cent.

Q The core analysis on the well that you are now speaking of is a dry hole, is that right?

A Yes, sir.

MR. KELLOUGH: We offer in evidence Exhibits 25, 26, and 27.

A We also cored our state BTC No. 1, but we have not received a copy of the analysis as yet, but we would be glad to furnish that if you would like to have it.

Q Have you prepared the schedule showing the well cost of

the wells Amerada has drilled in the Bagley pool to the Devonian?

A There has been a schedule prepared in our Tulsa Office.

Q Are you familiar with the figures shown on this schedule?

A In a general way, yes, sir.

Q Are they correct?

A Yes, sir.

(Marked Exhibit No. 28, for identification.)

A This tabulation shows that some of these are estimated because we haven't got all the costs in but they are reasonably accurate. The total cost shows that the well costs vary from approximately 195,000 to 280,000 with the exception of our State BTA No. 1 which was the discovery well, which cost four hundred eighteen thousand six hundred forty-two dollars.

Q You have been referring to Exhibit No. 28.

A Yes, sir.

MR. KELLOUGH: We offer it in evidence.

MR. SPURRIER: It will be accepted.

Q Mr. Christie, do you have an opinion as to the area that it may be feasibly and economically drained by one well?

A Certainly. In my opinion the minimum area would be 80 acres.

Q What is your opinion as to the allowable that should be ordered for this pool?

A Based on a production history my opinion, I don't believe it would hurt the wells to produce one and a half times the present top allowable. And possibly wouldn't hurt to produce them higher than that but it would be better to try at that rate for a period of time to see if there is any injury occurring.

Q When you speak of one and a half of the top allowable for this pool what would that amount to under the present allowable?

A The present allowable I believe is 242 or 243 barrels per well per day. One and a half times that would be approximately 363 barrels per day.

Q Mr. Christie, you are familiar with the arrangement of the proration units which have been proposed by this application?

A Yes, sir.

Q You are also familiar with the well spacing pattern which has been proposed?

A Yes, sir.

Q In your opinion are they fair and reasonable?

A Yes, sir, I believe they are.

MR. KELLOUGH: I believe that is all.

MR. ADAIR: Mr. Christie, your application here requests one and a half time top allowable as your allowable for an 80 acre unit.

A I believe that is correct. We are agreeable to that as I understand it.

MR. McCORMICK: As all wells compared to the Devonian have been drilled on a pattern which conforms to this 80acre pattern.

A All completed wells, yes, sir, have been drilled on that pattern.

MR. McCORMICK: Any danger of water coming into these wells and by-passing any oil by producing them at the rate

you suggest?

A I don't believe so, unless they should happen to be completed right at the bottom of the hole close to the water table. We did have one well completed in that manner and it started producing water and we plugged it back and it is a clean oil well at the present time.

MR. SPURRIER: Anyone else have a question of this witness? If not, he may be excused.

(Witness excused.)

C. V. M I L L I K A N,

having been first duly sworn, testified as follows?

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Will you state your name, please?

A C. V. Millikan.

Q Where do you live, Mr. Millikan?

A Tulsa, Oklahoma.

Q You are connected with the Amerada?

A Yes, sir.

Q In what capacity?

A Engineer.

Q How long have you been a petroleum engineer?

A Over twenty years.

Q Have you previously testified before this Commission?

A Yes, sir.

MR. KELLOUGH: Are the qualifications of the witness acceptable?

MR. SPURRIER: They are.

Q Mr. Millikan, have you made a study of the Roswell or Artesian water basin as it relates to the principles also involved here?

A Yes, sir.

Q Would you please describe the location of the structure and the general characteristics?

A Of the Roswell Artesian Basin?

Q Of the Roswell Artesian Water Basin.

A Well, knowing that the Roswell Artesian Basin was a limestone in many respects comparable to the type of formation which is producing in many parts of Lea County, it occurred to us that a study of it, an investigation of that water basin and a comparison of it with our oil reservoirs might throw a little light on what we have in these oil reservoirs.

The Roswell Artesian Basin has been drilled with a good many wells, has produced water over a long many, many years. It is generally understood what the situation is and has been thoroughly investigated by many geologists particularly by the United States geological survey. The formation is shallow enough that information can be obtained on it which is rather difficult to obtain in our deeper petroleum reservoirs.

Therefore, it occurs to us that if we could get the information on this it might be helpful in understanding what goes on in the oil field reservoirs.

Q Do you have a map which would represent that reservoir?  
A Would you care to accept this? It is a photographic copy.

MR. SPURRIER: It is much better for the record.  
(Marked Exhibit 29, for identification.)

A The total area of this Roswell Artesian Basin is shown by the large irregular more or less circular blue line on the exhibit which you have before you, Exhibit No.29. It happens to be orange. That is the area of the out drop of the San Andres line and then for the area within the red irregular long narrow area outlined in red is the Roswell Artesian Basin and that is the productive area and in that area, the San Andres is covered by anywhere from 300 to 900 feet of other sediments.

Q How many wells are there in the productive area?

A There was at one time a maximum of about 1400 wells, at the present time there are a little over 1100. The source of the water for that entire irrigation area is the rainfall on the larger area and it moves with the dip of the rock through a vuggy porosity with some joining and perhaps a small amount of fractures down into the irrigation area.

Q How great a distance would the water migrate in that?

A Some of it migrates a maximum distance of 80 miles from the Sacramento mountains at the most westerly out drop in the San Andres which is about 80 miles. It is probable that the water comes from a somewhat less distance than that, but a majority of it comes a matter of several miles because the closest to the town of Roswell, for example, is between 3 and 4 miles west of the city.

Q What is the well spacing in the productive area at this time?

A The well spacing varies. The productive area is divided into three primary districts which are shown by the hatched lines within the area outlined in red. The north area and the Roswell area which is in the central part and the Artesia area to the south end. The north area, the average well spacing is about 390 acres per well, in the south area it is just a little over 300 acres per well and in the Roswell area primarily because of the rather dense drilling in and adjacent to the city limits, the spacing there is, I believe, it is about 130 acres per well and the average spacing for the entire area is 23 acres per well but here are - of that, for example, in the Roswell area about 30 per cent of that total area, the well spacing is about one well to 640 acres.

Q What is the total production in barrels of water?

A The total amount of water withdrawn from the wells, that is the San Andres as well, which is now 54 per cent of the total water produced in the area is about five million two hundred thousand barrels per day, averaged over an entire year's time. There is about five months of the year that the production is rather low. But the five million two hundred thousand barrels per day, which is an estimate of the State Engineers and USGS for 1950 is almost exactly the same as the average daily oil production for the United States for that same period.

Q In your opinion, are the formations and fluid characteristics

of the Roswell Artesian water Basin similar or comparable to Bagley?

A I think they are rather comparable so far as viscosity - although it is possible that the viscosity in the Bagley Pool may be some less than the viscosity of the water that is being produced from these wells. The formation is rather similar. While it is rather evident from the outcrop that it is similar we attempted to get to core one of these water wells that was drilled down near Dexter and we do have a few pieces of core here which I would like to submit to the Commission.

Q Do you have the cores with you?

A Yes.

MR. KELLOUGH: At this time we offer in evidence Exhibit 29.

(Marked Exhibits 30, 31, 32 and 33 for identification.)

Q Mr. Millikan, referring to Exhibits 30 to 33 inclusive, will you please state what they are and what they show?

A These are pieces of vuggy lime which I think, except for their somewhat lighter color, you will find them quite comparable to certain of the vugs that appear in some of the Devonian cores which were taken from Bagley. Because of the greater amount of bleaching these cores - the formation there is somewhat softer than the Devonian and due to inexperience, from an oil field standpoint, rather crude equipment that they were cored with, unfortunately our recovery was quite low. But it does show the type of porosity of the vuggy, it is vuggy nature and that it is in general the same general type of porosity which does exist in the Devonian at Bagley, Crossroads, Knolls and even some of the



shallower producing zones.

MR. KELLOUGH: We offer in evidence Exhibits 30 to 33 inclusive.

MR. SPURRIER: They will be admitted.)

A The particular thing that impressed us with this is the distance with which the water moves through these porous formations. It has been demonstrated a number of times that producing one well will definitely effect a static well a distance of one to two miles which means that - and that comes rather quickly - it doesn't take a matter of days to determine it. I am sorry that we can't show the same - actually measure the same thing in the oil fields but we are <sup>not</sup> able to measure differences in pressure in the oil fields so far at five thousand pounds down to four thousandths of a pound which is the unit of measurements that they use in these water wells. Also, we have a little difficulty in, might have a little difficulty in producing these wells in order to get the interference that rates up to anywhere from seven to fifteen thousand barrels a day. So, we do have, usually, some difficulty in establishing interference under reasonable methods of operating our wells. But nevertheless, the change in static pressure, the uniformity with which they decline, the fact that newly completed wells have initial pressures which are comparable with older wells at the time the new wells are completed, does definitely demonstrate and prove the free movement of the fluids in the oil reservoirs.

Q There have been interference tests taken in the past, is that right?

A In the water wells?

Q In the water basin.

A Yes. There have been interference tests taken over a good many years and some of them rather specific, others are more of an observation type. But certainly, where these water levels fluctuate within a single day even up around Roswell which is the most prolific area, a matter of several feet, two or three feet and start declining on the static well about six o'clock in the morning when the farmers start opening their water wells for irrigation, then in the evening when those wells are shut down, this static level builds up again to a peak that occurs somewhere between twelve and three o'clock at night. Then, during the irrigation season, each day that water level comes back to not quite as far as it did before and by September or early October they reach the minimum water level in these static wells. From that period on until they start the planting season, there is a constant increase in the water level due to the movement of water in from this large area of some seven thousand square miles that is covered by the large, more or less, circular blue line or orange on the wall chart, and it has also been observed any number of times and reported that there is a rather quick response in the water wells to even a few days in a rainy season, a few rainy days.

Q Amerada made some interference tests in your investigation of this Basin?

A Yes, we made two specific interference tests and we got in one case definite indication over interference for a mile and a half and

the other one almost one mile. Those, of course, were measured in a few hundreds of a foot but these recorders are so precise in their measurement that there could be no question as to the effect of the well which was opened on the recorded well.

Q What conclusion would you draw as a petroleum engineer, by comparison of the Roswell Water Basin to the Bagley Devonian reservoir?

A Certainly, if water can move the distances that there is so much evidence from every standpoint that it does move in the Roswell Basin, certainly it gives us a new idea on the distance that oil can move in an oil reservoir. We sometimes get concerned even about whether it will drain oil from an area - ten acres, and then to 40 acres and when somebody says 80 acres, we get scared and yet, we have got the same type of formation in Roswell that we have in these oil fields and certainly if it can move the distance of several miles which there is ample evidence that it does, certainly it should be able to move it less than two thousand feet maximum distance under 80 acres spacing.

Q Have you prepared some exhibits having to do with the geometry of spacing?

A Yes, I have.

(Marked Exhibits 34 to 41 inclusive, for identification.)

MR. KELLOUGH: I wish to state referring to Exhibits 34 to 41, these have been previously introduced into evidence in a hearing in connection with the Knolls pool, so I will at this time ask the witness just to briefly as possible,

in his own words, present and describe these exhibits in order to refresh the recollection of the Commission.

Q Mr. Millikan, referring to Exhibits 34 to 41 inclusive, will you please state what they show?

A Exhibit 34 is divided into uniform squares with a dot representing - in the center of each - representing the spacing of regular 40 acres. Exhibit 35 is the drawing up leaving out every other horizontal line and all of the vertical lines and alternate dots representing wells. In other words, this is a spacing which we are requesting in the Bagley pool and have referred to and will show that it is a regular 80-acre spacing.

Exhibit 36, each of the squares shown on this Exhibit represents 80-acre, and the distance between the dots representing the wells is exactly the same as it is on Exhibit Number 35, so if we placed Exhibit 36 over Exhibit 35 at an angle of 45 degrees then it will be seen that the dots on Exhibit 35 and 36 do coincide, so that while we do have, asking for wells on alternate 40-acre tracts, it does provide a perfectly uniform 80-acre spacing.

Q Before you proceed. It was testified in a recent hearing having to do with Crossroads that the spacing pattern such as is proposed by Amerada is not a uniform spacing pattern. Do you recall that testimony?

A I think that was mentioned. I think that Exhibits 35 and 36 demonstrate spacing on an alternate 40 is a uniform spacing program. Exhibit 37 represents another type of 40-acre spacing which is permitted under the state-wide rules in the State of New Mexico which provides that the wells may be as close as 330 feet from the line so that here is the same as was shown in Exhibit 34, but shows

the well

the wells as if located 330 feet from the line. Exhibit 38, then, if we consider that a well will drain only to the limits of a square 40 acres with the well in the center of it, then the shaded area on this exhibit rents that area which is not drained by a well. Assuming that a well will drain only to the limits of an area, 40 acres, in the form of a square. However, that has been practiced in the State of New Mexico and permitted and certainly I am sure that the Commission would follow the companies in Oklahoma go to it if it did not drain to the limits of that. Exhibit 39 shows in colors the progressive steps in the colors in going from an actual 40 acre spacing with the well in the center to putting the well 330 feet from out of the corner and if it will drain, then, that entire 40 on which the well is located, then, the distances from this well to the opposite line of the 40 acre tract will be one fourth of a 90 acre tract.

In other words, the present state wide rules of the State of New Mexico do recognize that a well will drain 90 acres and that is in formations which are less permeable and less productive than that which exists in the Bagley pool. Just to show that it has been practiced, this small map which is marked Exhibit 40, is a development map of the Hobbs pool and shows colored in pink those 40 acres units in which the wells are so located as to show that they drain an area of 90 acres.

Q What percentage of the Hobbs pool is that area covered?

A I would say it is 75 per cent of the Hobbs pool was developed that way. In the Monument pool the same kind of map also showing in pink those 40 acre units on which the wells are located 330 feet from the line and where it has also been accepted

that they do drain the entire 40 acre tract and thereby recognize that they drain 90 acres and between 28 and 29 per cent of the entire Monument pool has been so developed.

Q What is your opinion as to the area that may be effectively drained by one well in the Bagley Devonian pool?

A Well, I think that one well will drain substantially more than 80 acres. Probably, well, the more I look at it the more I think that it will drain more than 160 acres.

Q In your opinion, if one well was drilled to every 40 acres within the productive limits of the Bagley pool, would that result in the drilling of unnecessary and wasteful wells?

A Yes, sir.

Q What is your opinion, Mr. Millikan, as to the allowable which should be granted for this pool?

A We are suggesting that the allowable be increased to one and one half times, that is, if we get the 80 acre spacing, that each unit be allowed to produce one and one half time the regular 40 acre allowed with the deep well adaptations, which I believe Mr. Christie testified would be 363 barrels per well.

Q Are there any other considerations in addition to the reservoir performance that would justify the application which Amerada has filed?

A Well, I think that is ample under most any case and certainly under the emergency that we have and the shortage of steel which is definitely going to limit the amount of drilling. I think it is worthy of even more serious consideration.

Q In connection with the question of pipe shortage, how many tons of pipe were used for the average well Amerada drilled last year?

A For all of our wells?

Q An average tonnage.

A Last year about 75 tons per well. That is the average for the entire company.

Q What would be the tonnage required to drill a Devonian well here at Bagley?

A 175 and 180 tons. Depending where the wells were located on structure.

Q Which is considerably more than twice what the average was?

A Yes, almost two and a half times.

Q Is a considerable amount of that pipe required to be left in the ground and unrecovered?

A Yes. Quite a bit of it will not, cannot be recovered. It is in there under settlement and probably after the years will have formations settle around it that will freeze the pipe and it cannot be recovered.

Q If the - an additional well drilled on each 80 acre unit would be an unnecessary well as you have testified it would, do you know about how many tons of pipe would be consumed in drilling unnecessary wells if this Bagley reservoir as defined was drilled, one well to 40 acres?

A Well, according to our present conception of the probable producing area there would be about 30 wells on 80 acre spacing or about 60 wells on 40 acre spacing so if it were drilled on

40 acre spacing there would be 30 unnecessary wells.

Q Which would require about 175 tons per well?

A 175 to 180 tons per well. Probably the rest of the wells would average 180.

Q By way of Mattig calculation what would that approximate.

A 5400 tons.

Q If this pool was drilled on 40 acres there would be 5400 tons of steel wasted?

A That is my opinion.

Q In unnecessary holes. Now, the application Amerada is requesting, the order which Amerada is requesting could save that tonnage?

A Save most of it, probably not all of it. There may be some exceptions necessarily but I would say it would save over 90 per cent of it.

Q Mr. Millikan, in your opinion as a petroleum engineer, will the order which has been requested here by Amerada avoid waste and provide the drilling of unnecessary wells and protect the correlative rights of all persons and result in the conservation of oil and gas.

A Yes, sir.

#### CROSS EXAMINATION

By MR. ADAIR:

Q Would it be possible during the 12 months period for which you are asking this order for an operator in your opinion to get necessary steel to drill this field from one well to 40 acres?



A Not unless the picture changes dog-gone fast.

Q Can the field during the 12 months period produce at the rate of one and one half times for the normal top unit allowable without waste?

A I don't know.

Q You think that it can?

A I am willing to try. If it doesn't work out, we can stop it before we create any waste. I don't believe it can produce much in excess of that without reaching probably the productive limits of the pool. I mean the productive capacity of the pool.

Q Production of the rate of one and one half top unit allowable for that top depth would give you the reservoir information that you would not otherwise get, would it not?

A Perhaps some.

MR. ADAIR: That is all.

MR. SPURRIER: Any questions of this witness, any further questions?

MR. CAMPBELL: I don't believe I heard you say where you took the core in the Roswell Artesian Basin?

A Near the town of Dexter about a mile and a half southwest of Dexter.

Q Do you know the location of the well?

A I may have it here. It <sup>is</sup> on the Carl Nicholas farm.

Q Nicholas?

A Right.

Q It is your conclusion relative to the movement of water through the Artesian Basin based on the assumption that the entire basin consists of formations similar to that core?

A Yes.

A Yes, sir, or better. Most probably much of it better than that.

Q Well, then - just a minute, please.

A The location of that well is the northeast quarter of Section 24, Township 13 South, Range 25 east in Chaves County.

Q Did you make your interference tests in the same location?

A No. One of them was made a little bit north of there and the other one just north of the town of Roswell.

Q One other question. Did I understand you to say that you were assuming that the intake area of Roswell Artesian Basin coincides with the outcropping of the San Andres?

A Yes, sir. It can be, of course, extended on into the actual basin itself. Perhaps some of the water would go down into it.

Q You are assuming that all of this water is moving through the San Andres?

A Yes, sir. That is the water that is produced from the San Andres.

Q I think you stated an average of 175 and 180 tons of pipe is necessary for a well?

A Yes, sir.

Q In your operations generally?

A Yes.

Q Pardon me?

A At Bagley.

Q At that depth?

A Yes.

Q Do you have any data on what your average allowable per well is elsewhere in wells of this depth?

A About the only other - well, we are producing at Jones Ranch is one hundred eighty barrels on a calendar day. That is of comparable depth.

Q Half the allowable that you get on an allowable and half in this field?

A That's right.

MR. CAMPBELL: That is all.

MR. SPURRIER: Are there any further questions of this witness? If not, the witness may be excused. Mr. Morrell did you have something?

MR. MORRELL: I did want to clarify possibly for the benefit of the Commission this matter of the Roswell Artesian. I don't wish to pose as an expert because I am not. However, I have apparently some other information to what Mr. Millikan has presented. The thickness of the St. Andres formation in the area of that basin along the Pecos River is approximately 12 or 14 hundred feet.

A My understanding is its maximum thickness is about 12 hundred, 8 hundred to 12 hundred, probably to truncation.

Q The depth from which the water is producing in the basin is more than 9 hundred feet.

A Mostly. I think some of them shallow at 3 hundred.

Q The orange line, the blue line before the Commissioners represents the outcrop of the basal member, you might say of the St. Andres?

A Yes at various parts of the St. Andres.

Q Inasmuch as the San Andres is on the top of the hills 40 miles west of Roswell.

A Were you asking me or telling me?

Q Yes. Is that correct?

A Yes, I think so.

Q In other words as you go west on the highway from Roswell to Ruidoso you cut through the San Andres on the 35 mile hill west of Roswell?

A It is a little further west than that, isn't it?

Q It is 35 or 36 miles, roughly.

A You may know better than I, but down at Cloudcroft you go to clear to Cloudcroft on the San Andres.

Q Are you familiar with the closed water basin established by the State Engineer, John Bliss?

A Within this area?

Q Yes.

A There are some I understand, to the west of that but not, -- oh, you mean closed to drilling.

Q The closed basin for drilling for water, right.

A Yes. That is represented by that red line.

Q The closed basin has published by Mr. Bliss, does not coincide with that red line in my information.

A Precisely no. It doesn't but the -- it covers that area and in some places will extend somewhat to the west.

Q The point I am getting at is the closed basin as defined, which includes the intake area for the water reservoir is only approximately 6 to 8 miles west of your inner red lines you have drawn on your map. In other words, that is the intake

area and that is the point I want to call to the attention of the Commission that the intake area is a very much smaller area than the outcrop area of the San Andres.

A That is your producing area. That is where you have limitations of drilling. That is the closed area nearest the 1100 wells on this two hundred or whatever it would be, seventy square miles, they limited the number of wells which could be drilled because those wells could produce all of the water that would come into that area you are speaking of.

Q You are speaking of your inner red line?

A Right.

Q The area is from six to 8 miles west of your inner red line which I am speaking of, which is also closed for drilling because it is the intake area.

A No, not because - that is not my understanding. It is closed but not because it is the intake area but because it is so closed to producing area that any wells produced in there will take water away from the wells producing in the red area. Not because that is the entire source of the water.

Q I want to call attention by reference to state engineer Bliss' records and reports. The major intake area of the basin is six miles west of Roswell with some from the 25 mile with some additional from the 25. The records show the Corps of Engineers will also show and the matter of the water dispute between New Mexico and Texas is based on the fact that they did not want water stored in the Hondo Reservoir which is 8 miles west of Roswell because the two drain into the Artesian Basin.

A Right.

Q That is approximately where the producing zone of water in the San Andres outcrops. Now, you have 300 feet below that producing zone which is not in the permeable water zone. I merely clarify that point on your area.

A Well, except that that doesn't agree with what the United States Geological Survey said about it.

MR. SPURRIER: Are there anymore questions of this witness? If not the witness will be excused.

MR. KELLOUGH: We have no further evidence to submit and on the basis of the evidence we have offered, we request that the Commission enter the temporary order for the period of one year in the manner in which it has been asked for in the application with the one exception that the productive limits be changed to conform with the testimony of Mr. Veeder.

MR. ADAIR: If the Commission please, we see no objection to entering the temporary order requested for so long as the allowable that is fixed is one and one half time the normal top unit allowable. We think that is important for two reasons. One, we think it gives the operators as well as the owners alike their fair share of the state allowable oil production, which they could not get if they were restricted to a 40 acre allowable on the 80 acre basis. We concur in the request for a temporary order.

MR. KELLOUGH: If the Commission please, before the matter is dismissed, there are a number of operators here and I would like to take the liberty, if the Commission cares to ask that they

express their views, if they care to as to our application.

MR. ADAIR: They operate wells in this field?

MR. KELLOUGH: I think Mr. Adair, if you have any objections to any other companies expressing their views, I am sure that you can state what objections you have. It is up to the Commission. I am asking if they wish to hear it.

MR. SPURRIER: We might put it this way, is there anyone that objects to the proposal that Amerada has made?

MR. MORRELL: So far as the interest of the federal government in the Bagley, we have no objections as a temporary order. For allowable not to exceed one and one half times normal allowable, with the understanding that it is temporary, primarily on the basis of shortage of steel.

MR. SPURRIER: Anyone else? If not the case is closed and will be taken under advisement.


We will proceed with the next case which is Case 268.

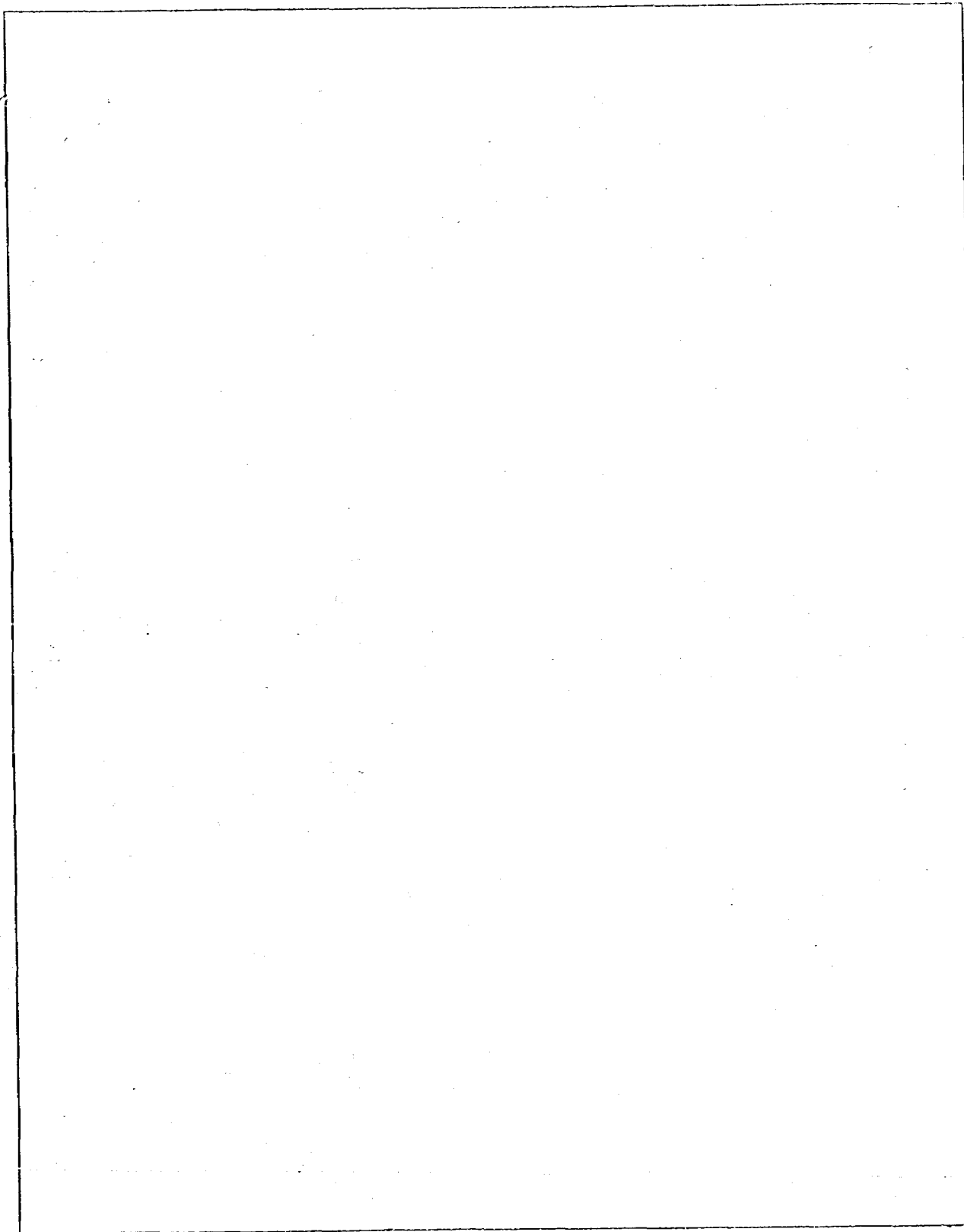
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C E R T I F I C A T E

I HEREBY CERTIFY that the foregoing and attached transcript of the hearing in Case No. 249, before the Oil Conservation Commission, on April 24, 1951, at Santa Fe, is a true record of the same to the best of my knowledge, skill and ability.

Dated at Albuquerque, this 15th day of May, 1951.

  
ADA DEARNLEY



E. E. GREESON  
COURT REPORTER  
UNITED STATES COURT HOUSE  
TELEPHONE 2-0572 2-4547  
ALBUQUERQUE, NEW MEXICO



BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO  
Santa Fe, New Mexico

\* \* \* \* \*

TRANSCRIPT OF PROCEEDINGS

CASE NO. 249

Regular Hearing

BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO  
Santa Fe, New Mexico  
May 19, 1954

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IN THE MATTER OF:

Application of the Commission upon its own motion for an order directed to operators in the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, to show cause why said pool should not revert to 40-acre spacing with allowable adjustment (to conform with stipulations of Order R-69-C which granted permission for temporary 80-acre spacing and 80 acre spacing units to be maintained for the pool for a period ending June 1, 1954).

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Case No.  
249

BEFORE THE FULL COMMISSION

TRANSCRIPT OF PROCEEDINGS

MR. WOODWARD: Mr. Woodward, Amerada, would like to make a preliminary statement as to its position in Case 249 at this time. Amerada is recommending that the present order R-69-C be continued in- for a period of one year and definitely thereafter with leave to any operator or any interested person to request a different spacing pattern upon a change of condition. The sole purpose of this recommendation is to eliminate the necessity of continuing or holding a further hearing in the matter so long as all interested parties are satisfied with the present order. Amerada's witness will be Mr. Christie.

R. S. CHRISTIE

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

DIRECT EXAMINATION

By: MR. WOODWARD:

Q Mr. Christie, state your name for the record, please?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Tulsa, Oklahoma.

Q By whom are you employed and in what position?

A Amerada Petroleum Corporation as petroleum engineer.

Q Have you previously testified before this Commission in the past as petroleum engineer and as an expert witness?

A Yes, I have.

MR. WOODWARD: Are Mr. Christie's qualifications accepted?

MR. SPURRIER: They are.

Q Are you familiar with the statements and contentions made by Amerada at the hearing in this case in May of last year and reflected in its brief at that time?

A Yes, I am.

Q Are you familiar with the operations and developments at Bagley since that time?

A Yes, sir.

Q On the basis of operations since the last hearing, do you wish to modify or add to any of the statements or contentions previously made by Amerada in this case?

A I would like to bring the record up to date for the past year. In that connection I would like to present Amerada's Exhibit No. 1, referring to Exhibit No. 1, you will note that the bottom hole pressure curve has declined very little in the past year's operation. The present average bottom hole pressure is 4142 pounds. The exhibit also shows accumulative production for the pool, the monthly oil production, the monthly water production, and the total number of wells. The monthly oil production for the month of March

averaged or was approximately 122,800 barrels, water production was 70,800 barrels. There has been no new development in the field in the past year.

Q These statements are summarized on a chart or graph that you hold in your hand?

A Yes, they are.

Q We ask that the chart or graph be introduced as Amerada's Exhibit 1.

(Marked Amerada's Exhibit No. 1, for identification.)

MR. SPURRIER: Without objection it will be admitted.

Q Will waste or injury to correlative rights be injured in it if we continue the present spacing at Bagley, at this time?

A In my opinion, it will not.

Q Is it your recommendation that Order R-69-C be continued then?

A Yes, it is.

MR. SPURRIER: Does anyone have a question of Mr. Christie? If not, he may be excused.

(Witness excused)

MR. WOODWARD: It is understood that this case being continued all prior records are incorporated in this record. If not, we will ask that they be incorporated.

MR. SPURRIER: Without objection they will be incorporated. You maybe excused, Mr. Christie. Anyone else have a comment in the case?

MR. CAMPBELL: We have a witness. Mr. Yuronka, would you swear him please?

(Witness sworn.)

MR. CAMPBELL: If the Commission please, I wish to enter an

appearance in this case on behalf of Texas Pacific Coal and Oil Company. My name is Jack M. Campbell, Roswell, New Mexico.

J O H N Y U R O N K A

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

DIRECT EXAMINATION

By: MR. CAMPBELL:

Q You state your name, please?

A John Yuronka.

Q By whom are you employed, Mr. Yuronka?

A Texas Pacific Coal and Oil Company.

Q In what capacity?

A District engineer.

Q Where do you maintain your office?

A Hobbs, New Mexico.

Q Are you a petroleum engineer?

A Yes, sir.

Q Have you testified before this Commission on previous occasions?

A Yes, sir.

MR. CAMPBELL: Are the witness' qualifications acceptable to the Commission?

MR. SPURRIER: They are.

Q Mr. Yuronka, are you acquainted with the wells of Texas Pacific Coal and Oil Company in the Bagley-Devonian field in Lea County, New Mexico?

A Yes, I am.

Q How many wells does Texas Pacific Coal and Oil Company have drilled and completed in the Devonian, Bagley field?

A There are five producing and two shut in.

Q Are all of these wells on 80 acre spacing pattern?

A Yes.

Q What about the two wells which are shut in?

A Those two are on 40 acres. They were originally drilled as pay but the pay formation was dry and completed as Devonian and shut in.

Q They were shut in in order to comply with the 80 acre pattern now in effect?

A Yes.

Q As you know, the present order of the Commission in this case requires certain reports to be filed periodically in addition to the regular reports to the Commission. Are you acquainted with the nature of those reports?

A Yes.

Q Do you prepare those reports for those wells?

A Yes, sir, I do.

Q Has Texas Pacific Coal and Oil Company submitted those reports as required by the order of the Commission?

A They have.

Q Do those reports contain the information with reference to pressure declines in the field since the last hearing on this pool?

A They have merely stated the bottom hole pressure of the wells at the time and compared them with the previous bottom hole pressure.

Q Have you made an analysis of the history of the production of those wells since the last hearing a year ago on this matter?

A Yes, I have.

Q Will you state to the Commission what your investigation shows relative to the pressure decline in this pool as related to the oil production?

A At the cumulative rate of production, January 1, 1954, 30,827 barrels of oil per pound drop in bottom hole pressure had been produced from the reservoir, this is equivalent to 32 psi

drop per million barrels of stock tank oil produced.

Q In your opinion, as an engineer, does that drop of only 32 pound per square inch per million barrels of oil reflect a good reservoir condition?

A Yes, sir, it does.

Q You have stated that the Texas Pacific Coal and Oil Company have two wells completed but shut in on 40 acre spacing, have any tests been made with reference to pressures in those wells?

A Yes, sir, they have.

Q Have comparisons been made between the pressure decline in those wells and pressure decline in other wells throughout the pool?

A Yes, they have.

Q Will you state to the Commission what the results of those comparisons show?

A Bottom hole pressure decline in those wells have been comparable to those wells that are producing in the field. One well bottom hole pressure on State D-1 in July of 1953 was 4229 and the south offset State-B-1 was also 4229. In January of 1954, State-D-1 had a bottom hole pressure of 4189 and State B-1 had a bottom hole pressure of 4189. This would indicate that there is interference, there would be interference if there was 40 acre spacing.

Q Based upon your analysis of the production history in this field, is it your opinion, that one well in this Devonian reservoir is efficiently draining 80 acres?

A Yes, sir.

Q What is the source of the reservoir energy, the principle source of reservoir energy in this pool?

A Water drive.

Q Do you have any data on the production of water from the Texas Pacific wells?

7  
A Yes, sir, I have. Of the five wells producing, four of them are producing less than one percent water. The only well that we have producing more than that is State C-3 and it produced 17 percent water.

Q Based upon this and the other testimony which you have overheard, what is your opinion with reference to the continuation of the operation of this field under the present 80 acre spacing plan and the present allowable?

A Well, it seems to me some what superfluous to submit the monthly reports as they are available on the C-115 and also in the engineering committee monthly report.

Q In your opinion, as an engineer, do you believe this field can continue to be operated under the present orders without any waste being committed?

A Yes, sir.

MR. CAMPBELL: That is all.

MR. SPURRIER: Anyone have a question of the witness? If not, the witness maybe excused.

(Witness excused.)

MR. CAMPBELL: I wish to state on behalf of Texas Pacific Coal and Oil Company, we concur in the recommendation of Amerada that this order of the Commission be extended for one year and indefinitely thereafter, subject to the right of any one, including the Commission to come in and seek a change in the spacing pattern. As Mr. Yuronka indicated we feel that the history of this pool has developed to the point where it may not be necessary any longer to submit these monthly reports in as much as the same information, as I understand it, is reflected on other reports submitted to the Commission, however, that is an administrative matter.



We simply make that as a suggestion, if the Commission continues to continue the pool under the operations of the present order of the Commission.

MR. SPURRIER: Anyone else have anything in Case 249?

MR. WALKER: Don Walker, Gulf Oil. Gulf's interest is relatively small in this pool as we only have a joint interest in Amerada's B T well No. 1. We concur with the recommendation to extend the provisions of R-69-C, not only for the one year period but indefinitely thereafter unless the Commission or some other operators asks for a re-hearing.

MR. SPURRIER: Anyone else? If not, we will take the case under advisement, and move on to Case 582.

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss.

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

IN WITNESS WHEREOF I have affixed my hand and notarial seal  
this 25th day of May, 1954.

  
Notary Public, Court Reporter

My Commission expires:  
June 19, 1955.

ADA DEARNLEY & ASSOCIATES  
STENOGRAPHIC REPORTERS  
ROOM 105-106-107 EL CORTEZ BLDG.  
PHONES 7-9645 AND 5-9548  
ALBUQUERQUE, NEW MEXICO



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION COM-  
MISSION OF NEW MEXICO FOR THE PURPOSE  
OF CONSIDERING:

CASE NO. 249  
(Consolidated with Case 315)  
ORDER NO. R-69-C

THE MATTER OF THE APPLICATION  
OF THE OIL CONSERVATION COMMISSION  
UPON ITS OWN MOTION FOR AN ORDER  
DIRECTED TO THE OPERATORS IN THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO, TO SHOW CAUSE  
WHY SAID POOL SHOULD NOT BE PLACED ON  
40-ACRE SPACING WITH ALLOWABLE ADJUSTMENT,  
UPON EXPIRATION OF TEMPORARY ORDER.

TEMPORARY ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing on April 16 and for further hearing on May 19, 1953, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," upon order to show cause why the Bagley-Siluro-Devonian Pool should not be placed upon 40-acre spacing with allowable adjustment resulting from expiration of Temporary Orders R-69, R-69-A and R-69-B.

NOW, on this 21<sup>st</sup> day of May, 1953, the Commission, a quorum being present, having considered the testimony adduced and exhibits received at said hearings, and being fully advised in the premises,

FINDS:

(1) That due notice having been given and proper service had upon the operators in said pool as required by law, and appearances being made, the Commission has jurisdiction of this cause.

(2) That originally the Commission issued temporary Order R-69, effective May 1, 1951, to and including May 1, 1952, authorizing the development and production of the Bagley-Siluro-Devonian Pool on an 80-acre spacing pattern with 80-acre proration units, upon the theory that in such pool one well would effectively drain 80 acres, and for the further reason of the then existing shortage of tubular goods.

(3) That thereafter and prior to the expiration of Order R-69, the Commission after due notice and hearing issued Order R-69-A, which granted an extension of Order R-69, as modified, for a period of one year from and after May 1, 1952.

(4) That testimony adduced at the May 19, 1953, hearing indicated that waste will be reduced and correlative rights preserved by a temporary one-year order modifying in certain respects previous requirements imposed by orders in the case, but authorizing 80-acre spacing of wells, and establishing 80-acre proration units in the Bagley-Siluro-Devonian Pool.

IT IS THEREFORE ORDERED:

(a) That 80-acre spacing of wells and establishment of 80-acre proration units in the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, described as:

Township 11 South, Range 33 East, NMPM  
All Section 34; NW/4 and S/2 Section 35

Township 12 South, Range 33 East, NMPM  
N/2 and SE/4 of Section 3; all of Section 2;  
E/2 NW/4 and N/2 NE/4 of Section 11

be, and the same is hereby authorized for the period of time from May 21, 1953, to and including June 1, 1954; such proration units to consist of the E/2 and the W/2 respectively of each governmental survey quarter section therein and the well location thereon shall be in the center (permissive tolerance 150 feet) of the northwest and southeast quarter sections thereof,

PROVIDED, HOWEVER, that the following described units do, and shall constitute permissible exceptions to the spacing and proration unit plan aforesaid:

Township 11 South, Range 33 East, NMPM  
N/2 NW/4 of Section 35; S/2 NW/4 of Section 35

Township 12 South, Range 33 East, NMPM  
N/2 NW/4 of Section 3; S/2 NW/4 of Section 3;  
N/2 NE/4 of Section 2; SW/4 NE/4 and NW/4 SE/4 of  
Section 2; SE/4 NE/4 and NE/4 SE/4 of Section 2;  
S/2 SE/4 of Section 2;  
N/2 NE/4 of Section 11

(b) That no well shall be drilled or produced in said pool except it be in conformity with the spacing and proration unit pattern hereinabove authorized unless, after notice and hearing, a special order of authorization is had and obtained from the Commission.

(c) That should any well be drilled off-pattern, under authority of any special order, then, and in that event, the same shall be entitled only to an allowable equal to that of a standard 40-acre proration unit with deep-pool adaptation as provided by Commission rules. Nothing contained in this order shall be construed as requiring by the Commission the drilling of any wells at any location.

IT IS FURTHER ORDERED, That the Bagley-Siluro-Devonian Pool and the 80-acre proration units therein, hereby established and confirmed, be and the same hereby are granted an allowable for the duration of this order equal to the top allowable for wells in the Siluro-Devonian depth range, calculated by the use of the 80-acre proportional factor as provided for in Rule 505 of the Rules and Regulations of this Commission, together with the acreage factor, if any there be;

PROVIDED, HOWEVER, that no well in such pool will be assigned an allowable greater than the amount of oil produced on official gas-oil ratio tests during a 24-hour period in compliance with Rule 301 of the said Rules and Regulations.

IT IS FURTHER ORDERED:

(a) That each operator in the Bagley-Siluro-Devonian Pool be, and each of them hereby is required to file with the Commission at its office in Santa Fe, New Mexico (copies to Hobbs office) on or before the 15th day of each and every month during the term of this order a tabulated report covering each well operated by him for the preceding month; such reports shall show:

- (1) The allowable
- (2) The actual oil production
- (3) The oil runs
- (4) Water production
- (5) Gas production
- (6) Cumulative oil, water and gas production;

provided, however, that such special reports aforesaid are supplementary of and in addition to regular reports and surveys now or hereafter required under the Rules and Regulations of the Commission.

(b) That each operator in said pool shall take or cause to be taken bottom-hole pressure tests of each producing well operated by him in said pool during the months of July, 1953, and January, 1954; the results of such tests shall be tabulated, and reflect the pressures of each well; the same shall be filed on or before the 5th day of August, 1953, and the 5th day of February, 1954, respectively, with the Commission at Santa Fe, New Mexico (with copy to Hobbs office); it is further provided, that such bottom-hole pressure tests shall be taken in conformity with the requirements of Rule 302 of the Commission's Rules and Regulations as revised. Should Form C-124 be used, the same should be designated as special Bagley-Siluro-Devonian Report, File Case 249.

IT IS FURTHER ORDERED:

(a) That this case be held open on the docket of the Commission for such further order or orders as may be necessary to meet arising situations adversely affecting the prevention of waste and/or protection of correlative rights; and,

(b) That not later than the regularly set hearing of the Commission for May 1954 the operators in said pool are hereby required to respond to an Order to Show Cause, to be issued by the Commission, why said pool should not be reverted to 40-acre spacing and standard proration units.

This order supersedes all previous temporary orders and interlocutory orders heretofore issued in this case.

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

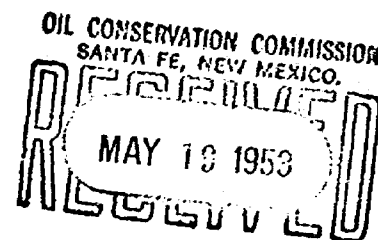
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*E. L. Mechem*  
Edwin L. Mechem, Chairman

*E. S. Walker*  
E. S. Walker, Member

*R. R. Spurrier*  
R. R. Spurrier, Secretary

S E A L



BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF THE  
COMMISSION UPON ITS OWN MOTION FOR AN  
ORDER DIRECTING OPERATORS IN THE BAGLEY-  
SILURO-DEVONIAN POOL TO SHOW CAUSE WHY  
THE POOL SHALL NOT BE PLACED ON A FORTY-  
ACRE SPACING PATTERN WITH ALLOWABLE  
ADJUSTMENT

CASE NO. 249

19 May 53

Preliminary Statement

This case was continued from the regular hearing of the Commission in April by interlocutory order R-69-B. In December, 1950, Amerada filed an application for a temporary order to establish 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool in Lea County, New Mexico. This application was docketed as Case No. 249 and was heard in April, 1951. On May 1, 1951, the Commission entered its Order R-69 establishing 80-acre proration units for the pool for a period of one year.

On its own motion, the Commission directed Amerada, Texas Pacific Coal and Oil Company and other interested operators to show cause why Order R-69 should be extended. The hearing on this motion was consolidated with Amerada's application for an extension of Order R-69 in April, 1952. On April 29, the Commission entered its Order R-69-A extending Order R-69 for a period of one year and in addition, requiring monthly production reports, ordering certain pressure maintenance tests be made in the pool, and directing the operators to show cause at the regular meeting of the Commission in April, 1953 why the pool should not be placed on a 40-acre spacing pattern with allowable adjustment.

The present hearing is on the Commission's motion directing operators in the field to show cause as provided by Order R-69-A. Notice of this hearing has been properly given.

Statement of Amerada's Position

At this hearing it is Amerada's contention that Order R-69-A in all its particulars should be extended for a period of one year from this date.

For cause it would show the following:

1. The Commission has twice found the evidence justified a temporary order for one year.

2. Temporary Orders R-69 and R-69-A have not resulted in waste or prejudiced correlative rights.

3. The same considerations justifying these orders still apply to a further extension of 80-acre spacing in the Bagley-Siluro-Devonian Pool for a period of one year.

4. Developments in the pool since April, 1952, also support an extension of Order R-69-A in all its particulars.

5. Forty acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells.

Testimony in Support of Amerada's Position

To save time and establish a more complete predicate for consideration of the question now before the Commission, it is requested that the records of previous hearings in this case be incorporated by reference and made a part of this record.

The first witness in support of Amerada's position is Mr. John A. Veeder. Mr. Veeder is a Geologist for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

1. The probable productive area of the Devonian at Bagley is the same as the area covered by Order R-69-A.

2. The Devonian in this area shows an anticlinal structure topped by a cap of impervious, cherty limestone.

3. There is no evidence of any structural irregularities in the area which would prevent the movement of oil through the pay.

4. The Bagley Devonian reservoir has very good vugular and fractured type porosity which is connected and continuous throughout the reservoir.

5. Nothing in the structure or lithology of the Devonian of Bagley would



indicate a need for smaller spacing units and have been set by Order R-69-A.

6. No additional geological information has been developed since April, 1952 which should prevent an extension of Order R-69-A.

The next witness in support of Amerada's position is Mr. R. S. Christie. Mr. R. S. Christie is a Petroleum Engineer for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

1. One well in the Devonian at Bagley will efficiently drain at least 80 acres.
2. One well in the Devonian at Bagley will economically drain 80 acres.
3. An extension of Order R-69-A will not cause waste and will tend to reduce the risk of creating waste.
4. An extension of Order R-69-A will not prejudice correlative right in the field.
5. A 40-acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells.
6. An extension of Order R-69-A will tend to promote efficient use of critical materials.
7. Studies of the field including its production history during the past year fully support an extension of Order R-69-A in all its particulars.

#### Conclusion

The question before the Commission is not a matter of first impression. R-69-A is a workable order. It has the great merit of having worked for the last two years. Operations in the pool to date fully confirm predictions made at previous hearings in this case by Amerada's witnesses with respect to pressure maintenance, efficient and economic drainage area, and reservoir behavior. We

LIST OF EXHIBITS

1. Commission's Order R-69.
2. Commission's Order R-69-A.
3. Notice of Commission with respect to this hearing.
4. Commission's Interlocutory Order R-69-B.
- E 5 Area map of the probable productive limits of the Devonian at Bagley with the locations of all wells drilled in the field.
6. Schlumberger, Amerada's BTN No. 1.
7. Completion Data Sheet on all Bagley Devonian wells.
8. Structure map contoured on top of the Devonian.
9. Structure map contoured on top of the Devonian Pay.
- J 10 A graph showing cumulative and monthly production of oil and water and the bottom hole pressure history of the Devonian Reservoir at Bagley.

believe Order R-69-A has worked fairly and efficiently from the standpoint of all concerned.

The order has not resulted in waste. It has promoted the uniform development of the field and the conservation of critical materials.

There is no evidence of any change in conditions since April, 1952 which necessitates discontinuance or modification of Order R-69 nor is there any evidence which should prevent extension of Order R-69 for another year.

Conversely, 40-acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells and would waste money and materials.

BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO

Santa Fe, New Mexico

TRANSCRIPT OF PROCEEDINGS

CASE NO. 249 & 315

Regular Hearing  
April 15, 1952

ADA DEARNLEY & ASSOCIATES  
COURT REPORTERS  
ROOM 12, CROMWELL BLDG.  
PHONES 7-9645 AND 5-9546  
ALBUQUERQUE, NEW MEXICO

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

Santa Fe, New Mexico.

April 15, 1952.

IN THE MATTER OF:

The application of the Amerada  
Petroleum Corporation for an  
order establishing proration  
units and uniform spacing of  
wells for the Bagley-Siluro  
Devonian Pool, Lea County,  
New Mexico.

CASE No.: 249 &  
315

-----

MR. KELLOUGH: My name is Booth Kellough, lawyer for the  
Amerada Petroleum Corporation at Tulsa. We have three 80-acre  
spacing cases set this morning. The Bagley, the Knowles and  
the Hightower. Each of these cases, as you know, has rather a  
long history. In order to expedite the matter and in order to  
keep the record straight in each one of these cases we have  
prepared a written statement which contains the statement of the  
background of the particular case together with our version of  
the issues which are now probably before the Commission and also  
a summary of the testimony that the witnesses will present.

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If the Commission would like to follow this statement as we present our case, I think it will help considerably in keeping each one separate and eliminating confusion and saving time. We have also prepared all our exhibits and we have them in a folder to be kept with each one of these cases so they may be kept separate.

The Case 249 and the Case also No. 315 which is fourth on the docket are the Bagley case.

In August, 1949, Amerada filed its application to establish 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool in Lea County, New Mexico. (Case No. 191)

The discovery well, known as State BTA #1 (located in NW/4 SE/4 Sec. 2-12S-33E) had been completed in the Devonian formation at a depth of 10,770 to 11,000.

Caudle #1 (SE/4 NE/4 Sec. 10-12S-33E) had been drilled as a dry hole in the Devonian. Amerada, Mid-Continent Petroleum Corporation and Texas Pacific Coal and Oil Company were each then drilling a well in the area asked to be spaced.

The application asked that the spacing order cover an area comprising 3040 acres.

It was requested that all wells be located in the NW and SE quarter of each governmental quarter-section.

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An exception was asked for the Mid-Continent well (SW/4 NW/4 Sec. 1-12S-33E) then drilling.

The case was first set on September 8, 1949 and then continued to December 20, 1949.

1. FIRST HEARING

The case was first heard on December 20, 1949. Texas Pacific appeared to protest the application. At that time Amerada had three completed Devonian wells and one drilling. Texas Pacific had one completed and one drilling. There were two Devonian dry holes, one of which was the Mid-Continent well.

Evidence was presented by both sides. Amerada filed a brief in support of its application.

On January 23, 1950, the Commission entered its order denying the application of Amerada on the ground that the evidence was insufficient to prove that one well on each 80-acre tract would efficiently drain the recoverable oil from the pool. Exhibit 1 is a copy of this Order R-2.

2. REHEARING

Amerada filed its application for rehearing together with another brief. The rehearing was denied February 8, 1950.

Exhibit 2 is a copy of Order R-8.

3. APPEAL

An appeal was taken by Amerada to the District Court of Lea

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County, New Mexico. The case was docketed as No. 8485 and service was made. The attorneys for protestant, Texas Pacific Coal and Oil Company, requested that the court hold a pre-trial conference for the purpose of considering the nature and scope of review by the court, including the question of what evidence may be presented.

After the pre-trial conference both parties filed briefs presenting their respective views as to what evidence could be presented on appeal and the jurisdiction of the District Court.

The District Court entered an order on the pre-trial conference in which it found that the review would be confined to the existence of substantial evidence before the Commission to support the order. Amerada's contention that it was entitled to a trial de novo as provided in the statute was denied.

On December 27, 1950, after the pre-trial conference order, Amerada voluntarily dismissed its appeal with prejudice.

#### 4. TEMPORARY ORDER

In December, 1950, Amerada filed a new application for a temporary order to establish 80-acre proration units for a period of one year. The well location pattern was the same as previously requested.

Since the entry of the original order denying the application, 13 additional producing Devonian wells had been drilled.

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There had been 18 wells to the Devonian formation drilled at the time of the second application.

The new application was based upon change of conditions and additional information obtained by subsequent development and also the critical shortage of tubular materials necessary for drilling operations.

The application for the temporary order was docketed No. 249. It was set for January 25, 1951, and continued to April 24, 1951.

Texas Pacific Coal and Oil Company concurred in the request for a temporary order provided the allowable was fixed at  $1\frac{1}{2}$  times the normal top unit allowable.

On May 1, 1951, the Commission entered its Order R-69 establishing 80-acre proration units for a period of one year from that date. Exhibit 3 is a copy of Order R-69.

5. EXCEPTION

In December, 1950, Amerada filed an application to force pool two 40-acre tracts comprising an 80-acre unit.

However, one of the 40-acre tracts, belonging to the U. S. Government, was located so that an exception would be required in any event. Consequently on June 15, 1951, Amerada dismissed the pooling application and filed an application for an exception to Order R-69 so as to make NE/4 NE/4 Sec. 3-12S-33E a fractional

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40-acre unit. The exception was granted and Caudle #5 was drilled on this tract.

6. MOTION TO SHOW CAUSE

The Commission on its own motion set the case for hearing on October 23, 1951, under Case No. 315, directing Amerada, Texas Pacific and other interested operators to show cause why temporary 80-acre spacing order R-69 should be continued. Exhibit 4 is a copy of the notice.

The hearing on the Commission's motion has been continued to this date. Technically, that motion is now moot, since Order R-69 expires by its own terms on May 1, 1952.

7. APPLICATION FOR EXTENSION

On March 24, 1952, Amerada filed its application for an extension of Order R-69 in all of its particulars for an additional period of one year from May 1, 1952. Notice for this application has been properly given.

8. ISSUES INVOLVED IN PRESENT HEARING

The issues are not the same as if the case was being presented to the Commission for the first time. The Commission has already found that the evidence justified a temporary order for one year. If no waste is being committed and conditions have not changed then the order is justified for another year.

Therefore the issues properly now before the Commission

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7.

are as follows:

- (1) Is any waste now being committed;
- (2) Do the same considerations impelling the granting of the temporary order still apply to justify an extension;
- (3) Are pressure maintenance operations necessary or feasible at this time.

I now offer into evidence Exhibit Number 1 which is Order No. R-2, Exhibit No. 2 which is Order R-8, Exhibit No. 3 Order No. R-69 temporary spacing order and Exhibit No. 4 which is the notice of the Commission, with respect to this hearing.

MR. SPURRIER: Without objection they will be received.

MR. ADAIR: Eugene Adair representing Texas Pacific Coal and Oil. In order that there be no misunderstanding and so that it may be expedited, may we obtain a ruling that Case 249 and 315 are consolidated, or that 315 is not now before the Commission, so that we can meet those two notices with one series of witnesses.

MR. SPURRIER: Yes, the Commission will so rule.

JOHN A. VEEDER,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KELLOUGH:

MR. KELLOUGH: I wish to make it plain that the evidence we are now presenting is in support of our application for a one

year extension of the temporary 80-acre order which is now in effect and also in response to the notice or motion of the Commission.

Q Will you please state your name?

A John A. Veeder.

Q Where do you live?

A Midland, Texas.

Q By whom are you employed?

A Amerada Petroleum Corporation.

Q What capacity?

A District Geologist.

Q You have previously testified before this Commission in your capacity as geologist or expert witness?

A That is right.

MR. KELLOUGH: Are the qualifications acceptable?

MR. SPURRIER: They are.

Q I hand you, Mr. Veeder, what has been marked as Exhibit No. 5 and ask you to state please what that is?

A This is a map of the Bagley-Devonian field showing with red outline the probable limits of production of the Devonian.

Q The red line area shows the area which is asked to be spaced in the application for the extension?

A That is right.

Q And it shows all the Devonian wells to date?

A That is right.

MR. KELLOUGH: We offer Exhibit No. 5 in evidence.

Q How many producing wells are now completed in the Bagley-Devonian reservoir?

A There are 19 producing oil wells to date. Amerada has completed 15, Texas Pacific has completed 4.

Q Mr. Veeder, I hand you what has been marked Exhibit No. 6 and ask you to state what that is?

A This is Schlumberger electrical log on the Amerada No. 5 Caudle, this is completed to Devonian producer.

Q I hand you Exhibit 7.

A This is Schlumberger electrical log on Amerada No. 1 Mathers "A".

Q Exhibit 8?

A Schlumberger on the Amerada No. 2 Mathers "A".

Q Exhibit 9?

A Schlumberger on the Amerada No. 1 State BTM.

Q Exhibit 10?

A Schlumberger on the Amerada No. 1 State BTK.

Q Exhibit 11?

A Schlumberger on the Amerada No. 1 State BTL.

Q Exhibit 12?

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A Schlumberger on the Amerada No. 1 C. R. Turner.

MR. KELLOUGH: We offer Exhibits No. 6 to 12 inclusive into evidence.

Q With these exhibits there has now been presented to the Commission, Schlumberger logs of all wells which have been drilled in the Bagley-Devonian Pool?

A That is right.

Q Mr. Veeder, I hand you Exhibit 13 and ask you to state what that exhibit is?

A Exhibit No. 13 is the production data sheet of all Bagley-Devonian wells. On these sheets we have attempted to show, we have shown rather the well number, the top of the Devonian and the datum on top of the Devonian, top of the Devonian pay and also the Devonian, the datum on top of the Devonian pay the Devonian cap and the Devonian completion data.

Q On the right hand column you have the completion data with reference to the casing and the depth and the manner in which the wells were completed?

A That is right, it shows all that data besides the completion information, that is the API, gas oil ratio, gravity and also the spud-in and completion date.

Q That is as to all wells in the Bagley-Devonian Pool, Amerada and Texas Pacific as well?

A That is right.

MR. KELLOUGH: We offer into evidence Exhibit 13.

Q I hand you now Exhibit 14 and ask you to state what that is?

A Exhibit 14 is structure map contoured on top of the Devonian of the Bagley field. Contour interval 50 feet.

Q I hand you what has been marked Exhibit No. 15 and ask you to state what that is?

A No. 15 is a structure map contoured on top of the Devonian pay. Contour intervals 50 feet.

Q Will you state why you considered it necessary and advisable to prepare the two structure maps?

A Two structure maps were drawn up and contoured because there is a presence of an impervious cap on top of the Devonian. The map contoured on top of the Devonian pay shows a true structural position of the Devonian reservoir.

Q In other words, in order to properly evaluate the geology of the Bagley-Devonian Pool it was necessary to prepare two structure maps, is that right?

A That is right.

MR. KELLOUGH: We offer in evidence Exhibits No. 14 and 15.

MR. SPURRIER: Without objection they will be received.

Q Mr. Veeder, considering all of the evidence which is

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available to you to date what is your opinion as to the probable productive area of the Bagley-Devonian Pool which you would recommend to be covered by the spacing order?

A The probable productive limits of the Bagley-Pool to date would be included within the red outline. This area covers approximately 2,400 acres.

Q Have you examined all of the samples in the wells at the Bagley?

A I have.

Q Have you made a visual examination of the cores which have been taken from the wells which have been cored by Amerada at Bagley?

A That is right.

Q Concerning the information which you have obtained from your examination of samples and the examination of cores, study of the Schlumberger logs which you offered into evidence, what is your opinion as to the porosity at Bagley?

A The Bagley-Devonian reservoir is very good vugular and fractured type porosity which is connected and continuous throughout the reservoir.

Q By that you do not mean uniform or regular?

A That is right.

Q You mean even though it may be irregular it nevertheless

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is in your opinion one continuous portion?

A That is right.

Q Mr. Veeder, from the geological information which has been obtained during the previous years development does that in your opinion show any change in condition from a geological standpoint which should prevent the extension of the 80-acre spacing order for another year?

A There has been no change whatsoever.

Q You have read the statement, the written statement which has been prepared in connection with this Bagley Case, have you?

A That is right.

Q Are the statement of facts therein contained true and correct insofar as your knowledge and information is concerned?

A That is right.

MR. KELLOUGH: That is all.

MR. SPURRIER: Does anyone have any questions of this witness? If not the witness may be excused.  
(Witness excused)

R. S. CHRISTIE,  
having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KELLOUGH:

Q Would you please state your name to the Commission?

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A R. S. Christie.

Q Where do you live?

A Tulsa, Oklahoma.

Q By whom employed?

A Amerada Petroleum Corporation.

Q In what capacity?

A Petroleum Engineer.

Q You have previously testified before this Commission in your capacity as a petroleum engineer or expert witness?

A Yes, sir.

MR. KELLOUGH: Are the qualifications of this witness acceptable?

MR. SPURRIER: They are.

Q What is the average gas-oil ratio for all wells in the Bagley-Devonian Pool, Mr. Christie?

A Average gas-oil ratio for all wells in the Devonian, Bagley-Devonian is 30 cu. ft. per barrel of oil.

Q What is the gravity of the oil?

A The gravity of the oil is approximately 44 to 46 degrees API.

Q I hand you what has been marked as Exhibit No. 16 and ask that you please state what that exhibit is?

A Exhibit 16 is a graph showing the monthly water production,

the total number of wells completed, the cumulative production, the monthly oil production and the bottom hole pressure history of the Bagley-Siluro-Devonian Pool.

Q Will you briefly summarize for the Commission what information is shown on that exhibit?

A The data ---

Q (Interrupting) In other words, -- go ahead.

A The data indicates normal development for an oil pool with the monthly production continuing to increase as new wells are brought in. You will note about May of 1951 the allowable was increased in the pool which showed substantial increase in the monthly oil production. At that time the bottom hole pressures in the reservoir decreased at an accelerated rate over and above the previous pressure history.

Q Would you please show that to the Commissioners as you testify? You can stand around where you can see it.

A I have another copy.

Q You were referring to the accelerated production and the drop in pressure during what month in 1951?

A In April or May of 1951.

Q What happened to the pressures after that time?

A Well after the reservoir reached a more or less static condition again after increasing the allowable, the pressures

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leveled off again and remained more or less uniform without any appreciable drop until the last survey which has just been completed. I would like to point out that there was an error in one well in the last survey and the red line shows that correction so that the average pressure as of the first of April is 4213 pounds per square inch or 8 pounds above the pressure taken six months previous.

Q Then in the last six months there has actually been an increase in pressure at Bagley?

A Yes, sir, average increase.

Q What was the original reservoir bottom hole pressure as shown in that exhibit?

A The original was approximately 4285.

Q I mean the first pressure that you have shown on that exhibit?

A Approximately 4285.

Q And what did you say the present pressure shown on that exhibit was?

A 4213.

Q How many barrels of oil have been produced during that interval?

A From the beginning of production until April 1st the total production has been 2,573,171 barrels.

Q What has been the drop in pressure, total?

A I will correct that original bottom hole pressure that I attempted to read. It was actually 4273 pounds which shows a total pressure drop from the beginning to April 1st, 1952 of 87 pounds.

Q There has been during the last six months an increase in pressure?

A Yes, sir.

Q Does the pressure and production information which you have depicted on Exhibit No. 16 indicate anything to you with reference to the type of energy found at Bagley?

A In my opinion we definitely have a very active water drive and the pressure history and also the productivity index tests together with our production tests, completion production tests indicate the reservoir of reasonably good permeability.

MR. KELLOUGH: We offer into evidence Exhibit No. 16.

MR. SPURRIER: Without objection they are received.

Q From your production experience, have the wells at Bagley had a high and reasonably uniform capacity to produce, would you say that from your experience as a petroleum engineer?

A Yes, I think they have.

Q Will you briefly state to the Commission for their information the situation that exists under the present 40-acre spacing

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order where wells are permitted to be drilled 330 feet from the boundary line of the section and also compare that with the situation which exists with reference to the application for the extension of 80-acre spacing as it pertains to and relates to the drainage area of one well?

A Under the present rules of the Oil Conservation Commission, wells may be drilled 330 feet from the boundary lines of the 40-acre tract. This would authorize the drilling of wells from 330 feet from the lines from each corner of a quarter section and would result in a distance of 1980 feet between wells. Such locations are permitted under the statewide rule of the Oil Conservation Commission and is commonly referred to as 40-acre spacing. Assuming that the statewide 40-acre spacing rule presumes efficient drainage of any reservoir spaced under the authority of that rule, that is a distance of 1980 feet, the result is that the present rule recognizes that efficient drainage does occur for a distance of over 990 feet from a well, or over an area equivalent to 90 acres. 80-acre spacing as requested by Amerada Petroleum Corporation for the Bagley-Siluro-Devonian pool, is on a uniform spacing pattern which would result in a distance of 1866 feet between wells or the efficient drainage of an area of 80 acres in a form of a square. The 80 acre spacing proposal would require each well to drain from a distance of only 933 feet, which is 57 feet less than is permitted

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under statewide so-called 40-acre spacing. There are many pools in New Mexico in which many wells have been drilled in the corner of 40-acre tracts instead of the center. This is authorized under the statewide order commonly referred to as 40-acre spacing. Many of these wells, which, as authorized, are presumed to drain an area of 90 acres are producing from reservoirs that are not under an effective water drive and do not have other conditions which are conducive to a large drainage area as exists in the Bagley-Siluro-Devonian Pool.

Q What has been the average well cost of the Amerada producing completed wells at Bagley?

A The average cost of all the Amerada Devonian producing wells at Bagley has been approximately \$220,000 per well.

Q Mr. Christie, in your opinion will one well in the Bagley-Siluro-Devonian pool effectively, and efficiently and economically drain an area of 80-acres?

A In my opinion it will.

Q What, in your opinion, should the allowable be if the application for the extension is granted?

A Under the present allowable of  $1\frac{1}{2}$  times the normal unit allowable there does not appear to be any waste occurring and I would recommend the same allowable be continued.

Q You recommend the same allowable as contained in Order R-69?

A Yes, sir.

Q In your opinion is there any waste now being committed at Bagley or any inequity existing toward any operators or royalty owners?

A No, I don't believe there is.

Q Is the shortage of steel still critical?

A As far as our Company is concerned, it is as critical as it was a year ago.

Q The conditions in that respect have not changed materially?

A No, sir.

Q What is the amount of steel for the average well of all wells drilled by Amerada during the past year?

A Approximately 75 tons per well.

Q Approximately how many tons of steel does it take to drill one well at the Bagley?

A Approximately 175 tons to 180 tons.

Q And it requires about  $2\frac{1}{2}$  times more tonnage of steel to drill a well at Bagley than it has the average well drilled by Amerada during the last year?

A That is correct, yes, sir. I think another thing might be pointed out here in connection with the shortage of steel. It seems to me that it would be well to try and distribute that

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as well as we could over not only this State but other States as well, in order to increase our reserves. In that connection I would like to read into the record, if I may, a statement by General Thompson at North Texas Oil and Gas Association Meeting in Wichita Falls several weeks ago.

MR. SPURRIER: Very well.

A The General states, "by the year 1975 the United States will require 12 to 14 million barrels of oil per day." The Texas Commissioner said, "which is about double our present oil requirements. Today we are producing 6,165,000 barrels per day. We have now in addition about 500,000 barrels daily reserve producing ability for domestic wells."

That is not very much reserve - half a million barrels. This is at a rate that we call most efficient, the rate that will most fully utilize the reservoir energy and do no harm to wells.

In 1951 we fully met the greatest demand in history and added to our reserves more than any year before. I think it is well to keep that in mind and try to, instead of drilling unnecessary wells and pools where we have discovered it be better to spread it around and try to discover some new reserves.

Q You mean, Mr. Christie, that the steel and materials which can be saved at Bagley could be used for further development in other areas in New Mexico?

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A In New Mexico, primarily in any state as a matter of fact.

Q Amerada is the larger operator in New Mexico?

A Yes, sir.

Q We have other interests and other leases in the State of New Mexico in which we are vitally interested?

A We do.

Q And Amerada contemplates as much exploratory and development work in New Mexico as it possibly can, as can be justified? Is that right?

A That is correct.

Q Will the saving of the materials which would otherwise be wasted in unnecessary wells, could that be employed in the further development and carrying out of the Amerada's exploratory program in the State of New Mexico?

A It could and I am sure it will be.

Q In your opinion has there been any change in condition during the past year which you would say, as a petroleum engineer, should justify or require a denial of the application for the extension?

A Will you state that again, please?

Q Has there been any changed condition, in your opinion, which you think should prevent the application for extension

from being granted?

A No, I believe not.

Q Has Amerada had under consideration the question of whether or not pressure maintenance or secondary recovery operations are advisable or feasible or necessary at Bagley?

A Yes, sir, we have considered it at this time, with the minor drop in bottom hole pressure we doubt whether it would be feasible or necessary at this time. It may be later on that it would be advisable to do that but at the present time it doesn't seem to be advisable.

Q In the event at any future time should it become, indicate that it would become necessary, it would be considered by Amerada would it not?

A Yes, sir, it would.

Q But at the time, in your opinion, in view of the pressure and production history it is not necessary, is that right or feasible?

A That is correct. Yes.

Q Mr. Christie, you are familiar with the work of the Committee of Inter-State Oil Compact Commission in your studies on well spacing?

A Yes, sir, I am. To a certain extent.

Q Are there certain conclusions expressed which conform to

your views which are pertinent to this particular matter? If so, would you read those statements to the Commission?

A I think there are two or three short statements in here that agree with my conclusions if I can find them readily.

I am now quoting from the well spacing report published and distributed by the Interstate Compact Commission of which the State of New Mexico is a member.

"With respect to complete water drive fields Muskat-Aquafier, states and refers to the page in this report or at least in his report, "In complete water drive fields the well density should be only so great as will provide the allowed field withdrawals. The latter, if feasible should be limited to the capacity of the acre to replace the withdrawals without continued and excessive pressure declines." I think that fits the Bagley-Devonian field very well.

Page 53, Paragraph 4. "In water drive reservoirs the energy available for removing oil from remote locations in a reservoir is limited or inherently qualified primarily by time. The efficiency with which this energy may be expended is dependent upon the type of porosity, percentage of porosity and permeability and structural relativity and conformations but not on well spacing."

The report in summarizing has several suggestions for close spacing and several for wide spacing. I would like to quote one

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or two under the wider spacing pattern which they suggest.

From Page 55 bottom, number 1. "When reservoirs have considerable structural relativity and high porosity and effective permeability resulting in high productivity indices, which in turn permit high individual well allowables with low producing bottom hole pressure draw down." That is one condition where they recommend wide spacing.

Another is number 4, page 56. "When deep well pays result in high drilling and high operating costs per well, requiring a greater return per well to insure reasonable return on investment."

"When deep well pays indicate low ultimate reservoir recovery, and close drilling is not economically justifiable."

I believe that is all.

Q Mr. Christie, Amerada is interested in producing oil?

A Yes, sir.

Q They don't want to leave it in the ground any more than anybody else?

A That is true.

Q Have you read the prepared statement which has been prepared for this Bagley case?

A Yes, I have.

Q Are the statements of facts which is contained therein true and correct to the best of your knowledge and information and belief?

A Yes, sir.

MR. KELLOUGH: That is all from this witness.

MR. SPURRIER: Does anyone have a question of this witness?

MR. ADAIR: I have a few questions, please.

CROSS EXAMINATION

By. MR. ADAIR:

Q You have been testifying solely thus far about the Bagley-Siluro-Devonian reservoir have you not?

A Yes, sir.

Q As an engineer in determining whether or not waste will take place, in determining whether or not a reservoir will support 80-acre spacing, or making any other determinations with reference to that reservoir, you should be confined of course to the facts relating to that reservoir, should you not?

A That is correct.

Q Will you refer back, if you will please, to the pressure that you found in April, 1951 when the, just prior to the time that the 80-acre allowable was placed into effect in this pool?

A My records show that the pressure on April 1, 1951, the average pressure per field was 4,258 pounds.

Q What is the present pressure?

A Present pressure as of April 1, 1952 is 4,213 pounds.

Q Which is a drop of only approximately what?

A 45 pounds.

Q And during that period of time do you have the figures

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on how much oil has been withdrawn from the reservoir?

A To April 1, 1951 the cumulative production was 951,127 barrels.

Q So that during the year prior from April, 1951 until April, 1951 with a drop of only 45 pounds, you produced in excess of 1,700,000 barrels of oil?

A That is correct. 1,722,000.

Q As an engineer do you not consider this a reservoir of unusual quality?

A I think it shows very good performance.

Q During the past six months your pressure decline has not only been arrested but you have had an increase in pressure, have you not?

A Yes, sir.

Q So from the standpoint of pressure maintenance and operations the feasibility of instituting pressure maintenance operations, that is not necessary. Nature is maintaining pressure in this reservoir?

A That is correct.

Q How many rigs does Amerada have running in the field at the present time?

A I believe we are drilling just one well to the Devonian.

Q But also you are drilling one well to the Pennsylvanian,

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are you not?

A Yes, sir.

Q Most of the Devonian reservoir is overlaid with the Pennsylvanian productive formation, isn't it?

A That is correct.

Q So that the operators in this particular field are in fact drilling one well to 40 surface acres at the present time, are they not?

A Yes, sir.

Q By drilling one well to the Devonian and one well to the Pennsylvanian?

A That is correct, substantially correct.

Q Do you know whether or not it is true that Texas Pacific has two rigs running in the field at the present time?

A I do not know. I understood they had one going to the Devonian and one to the Pennsylvanian.

Q That is correct. So that from June 1949 when the original well was drilled up until the present time, a period of almost three years, would you or would you not say that the operators in that field have diligently developed the field?

A I would say they had, yes, sir.

Q They have maintained rigs running in the field at all times, have they not?



A That is correct. I think they probably kept them as busy as they would be able to get pipe for them.

Q So that from the standpoint of correlative rights and standpoint of the producers and the royalty owners getting their fair share of the state allowable oil production they will get more oil during the coming year on the 80-acre spacing program that has been in effect and which is here requested to be continued for one year, they will get more oil that way than if they go to 40-acres at the present time, as far as spacing is concerned, will they not?

A In considering reservoirs?

Q Yes,

A Well, --

Q (Interrupting) The reason for that of course being that they will get an allowable and a half for the 80-acre spacing even if they went to 40-acre spacing during the year in question, they could not drill in 40-acre spacing, isn't that true?

A That is true, yes, sir. It would take them some time to make up that half an allowable if they went to 40-acres.

Q It would take some three to four months to drill a well?

A Yes, sir.

Q In that field. If you have trouble it takes sometimes 6 to 8 months to complete it, doesn't it?

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A That is correct.

MR. ADAIR: I believe that is all I have.

MR. SPURRIER: Anyone else have a question?

By MR. WHITE:

Q As to the bottom hole pressures referred to in Exhibit 16, how many wells were these bottom hole pressures taken?

A Generally speaking they were taken in all wells that they could get in conveniently. In most cases I would say 90 to 95 percent of them.

Q Were individual bottom hole pressures of each well uniform or was there a large variance?

A In my opinion they are rather uniform. We had --

Q (Interrupting) You have the figures as to the greatest variance between the wells?

A We had one edge well that had a lower pressure than the other wells.

Q What was that?

A Examination of that well, Amerada State LTD No. 3, showed a bottom hole pressure of 3993.

Q When was that bottom hole pressure taken?

A That was taken as of April 1, 1952.

Q What was the bottom hole pressure prior to that time?

A Of that particular well?

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Q Yes, sir.

A You are speaking of the individual well?

Q Yes, sir.

A That particular well showed a decline of 179 pounds over a six month period..

Q Is that the last six months?

A The last six months. That is an edge well incidentally. With the exception of that one particular well the other wells varied from 4178 pounds to 4245 pounds.

Q Does that exhibit show the individual pressure, bottom hole pressure?

A Exhibit 16 does not.

Q Just the average?

A Just the average.

Q Have the exterior limits of the pool been reasonably determined?

A Yes, sir, I think they have.

Q Did<sup>you</sup>/say that there is any possibility or likelihood of the wells coning on an 80-acre spacing or not?

A No, I don't believe they will under 1½ times the normal unit allowable.

Q To what do you attribute the pressure increase about the same time as an increase in production?

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A Well, at no time in the history of the field have we had any material increase in the bottom hole pressure with increase in production. With the exception of that period that was pointed out earlier, between March 1951 and October 1951 where the allowable was substantially increased and the bottom hole pressure decreased, the reservoir has been under a rather static condition.

Q Could you furnish us the actual bottom hole pressures per well?

A Yes, sir.

MR. WHITE: That is all I have.

MR. SPURRIER: Anyone else?

MR. ADAIR: One more question.

By MR. ADAIR:

Q Mr. Christie, even though the area limits of the field have been fairly well delineated it is true is it not that the field has as yet not been developed to one well to 80-acres?

A That is correct, yes, sir. There is a possibility of other locations or other wells but from our contouring I believe we have pretty well established the limits of the field.

Q But those wells with one exception, but those wells that have been drilled in the field have been drilled on pattern and there has been only one exception asked for and granted so far

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as productive wells are concerned, is that not true?

A I believe that is correct.

Q So, following your idea that each field should stand on its own merits insofar as reservoir information is concerned and insofar as spacing and any orders that the Commission may issue with respect to the firel, this is one field that is not, where the Commissions problem is not complicated by reason of a large number of exceptions either granted or requested.

A That is correct, yes, sir.

MR. ADAIR: That is all.

MR. SPURRIER: Anyone else?

ByMR. MACEY:

Q Mr. Christie, on your bottom hole pressure curve, Exhibit 16, what was the shutin time of the bottom hole pressures?

A 48 hours.

Q In every case they were 48 hours?

A Well, essentially 48 hours. It may have been a few minutes one way or another.

Q In your survey that was taken in October, 1951, according to the sheet here, you show a total of -- were all the wells taken on that survey, or almost all of them?

A Almost all of them.

Q The curve that you show as a number of wells, that is

the number of producing wells?

A Yes, sir, that is the number of producing wells.

Q You are going to submit complete bottom hole pressure information?

A Yes, sir, I would be glad to do that.

Q (By MR. WHITE) Was that report from which you read of the Interstate Oil Compact, was that report based on the Bagley-Siluro-Devonian Pool?

A Well, I am not sure what fields are included in the analysis of this report but I'm sure they have considered a large number of fields, both water drive and solution gas drive fields.

MR. WHITE: That is all.

MR. SPURRIER: Anyone else?

MR. KELLOUGH: Mr. Christie, do you have with you at this time a tabulation of the bottom hole pressures prepared in the form requested by Mr. Macey and Mr. White that you could offer into evidence at this time? Or would it be helpful to the Commission to prepare especially a tabulation as to each well?

A I can do it either way. Which ever they prefer. I could read these into the record individually right now if you would like to have them.

MR. SPURRIER: How many are there?

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A 16.

MR. SPURRIER: Go ahead.

A These are all static pressures taken at a datum of minus 6700 feet, shut in time approximately 48 hours. I will read first all Amerada wells.

Amerada State BTA No. 1, 4224 pounds also give change plus 4 over the last period.

BTC No. 1, 4234 plus 8 pounds.

State BTC No. 3, 4245 pounds plus 34 pounds.

State BTD No. 1, 4205, plus 41 pounds.

State BTD No. 3, 3996 pounds, decrease 179 pounds.

State BTI No. 1, 4236 pounds, plus 14 pounds.

State BTL No. 1, 4206 pounds, plus 46 pounds.

Caudle No. 2, 4181, plus 15 pounds.

Caudle No. 5, 4222 which is the initial pressure.

I might interject here in passing, that the Caudle No. 5, which is the last well completed, had a pressure approximately the same as other wells in the field which to me shows very good drainage.

Mathers No. 1, 4187 pounds, plus 9 pounds.

Mathers "A" No. 1, 4178, minus 20 pounds.

Mathers "A" 2, 4213, which was initial pressure.

That again is, reflects a very good drainage, I believe it

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happens to be the average for all the pressures.

Now, going to the Texas Pacific Coal and Oil Company well tests; their State B No. 1, 4240 pounds, minus 18 pounds.

State C No. 1, 4205, minus 23 pounds.

State C No. 2, 4200, minus 37 pounds.

State C No. 3, 4212, minus 18.

Q (By MR. KELLOUGH:) The second figure that you gave in each case, minus or plus, referred to either the drop or the rise in pressures as between what dates?

A Between October 1, 1951 and April 1, 1952, six months period.

Q I wish to say to the Commission at this time, if there is further pressure information in any form which you desire, we would be glad to prepare and furnish the Commission with anything further they wish in that connection.

By MR. MACEY:

Q Would it be possible, Mr. Christie for you to furnish us with a complete pressure history in tabular form?

A Not only possible, but we will do it.

Q One thing I wanted to ask you, Mr. Christie, in Section 3, the SE of the NE the No. 1 Mathers, what was the pressure on that well?

A 4187.

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Q What was the pressure on the No. 5 Caudle in the 40-acre unit to the North?

A 4222.

MR. MACEY: All right.

MR. SPURRIER: Any other questions? If not the witness may be excused. Let's take a five minute brief recess.

(Recess)

MR. SPURRIER: Mr. Campbell, did you make a comment just as we recessed for the record?

MR. CAMPBELL: No, sir. I started to make a statement but he said there was going to be more testimony.

MR. KELLOUGH: I have one more question I would like to ask this witness. Will you please very briefly explain your opinion as to why the pressure has been maintained in Bagley in the manner in which it has?

A The pressure in the Bagley-Siluro-Devonian Pool has remained more or less static or slightly below the original bottom hole pressure because of the rate of withdrawals which have been approximately the same or at times a little less than the rate of influx of water from the surrounding aquafier. The explanation for the increase over the past six months is due to the rather accentuated decrease for the six months previous. Apparently what happened there, as soon as the pressure dropped

and by reason of the larger withdrawals and the reservoir became static again after the water influx caught up with the withdrawals, then the pressures started building up again. It is a good bit similar to hydraulic system or pipe line where you have pressure at one end and a valve at the other. As soon as you open the valve you get a slight drop and if you continue to maintain the pressure at the other end the decrease in pressure will finally be caught up with the pressure in the back. The same thing is more or less true with an Artesian well. If you open a valve on an Artesian well you all know it will flow with-  
artificial  
out any additional/lift, it is caused by the head of water behind it.

This reservoir is under a hydraulic system and has a large body of water following the oil in, and any time you change those conditions why you change the conditions in the reservoir and it takes some time for the momentum to catch up to the withdrawals.

MR. KELLOUGH: That is all the testimony we have to offer except that I wish to now --

A( (Interrupting) I might point out also that when you are talking about 8 pounds increase or decrease, you are talking about a very small percentage and it is very conceivable to have have that much of an error in your instruments. Where your decline or increase is of minor value it is questionable some-

times as to whether it is the exact figure or not. 8 pounds in 4200 would only be two tenths of one percent or in that neighborhood. But the fact that the increases were more or less consistent would lead us to believe that we actually had a slight increase on this last survey.

Q (By MR. KELLOUGH) That increase would not indicate that there weren't enough wells drilled out there would it?

A No, sir.

MR. KELLOUGH: I would like to offer into evidence the statements of fact which are contained in the written statement and the argument as submitted in memorandum brief.

MR. SPURRIER: Without objection they will be received. Does anyone have a question of this witness? If not the witness may be excused.

(Witness excused.)

MR. SPURRIER: Any one else to appear in this case?

MR. ADAIR: If the Commission please, purely for the purpose of supplementing the testimony given by Amerada, and incidentally let us say that we have all of the information that they put on, we have worked up on our own behalf to put before the Commission if it were needed. However, we believe that Amerada has made a very complete presentation. We have only some information with respect to our own wells that we would like to let the Commission

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examine in order to determine whether or not we actually as we think we have a reservoir of very high quality. We will ask Mr. Peck Hardy to be sworn.

PECK HARDY,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. ADAIR:

Q Will you state your name to the Commission?

A Peck Hardy, Jr.

Q Where do you reside?

A Midland.

Q By whom employed?

A Texas Pacific Coal and Oil Company.

Q What capacity?

A Division Engineer.

Q Where were you educated?

A Graduate of Texas A & M College.

Q Do you hold a BS Degree in Petroleum Engineering from that School?

A Yes, sir.

Q How long have you been employed by Texas Pacific Coal and Oil Company?

A A little over four years.

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MR. ADAIR: Are his qualifications as an expert acceptable?

MR. SPURRIER: They are.

Q Have you prepared, Mr. Hardy, or has there been prepared under your supervision a tabulation of certain productivity index tests run by Texas Pacific Coal and Oil Company on its wells in the Bagley-Devonian field?

A Yes, sir.

Q Is that the tabulation?

A Yes, sir.

MR. ADAIR: We offer that as Texas Pacific Coal and Oil Company Exhibit No. 1.

MR. SPURRIER: Without objection it will be received.

Q Will you briefly tell the Commission exactly what the tabulation shows and particularly with respect to producing rates at which the wells were tested and the PI's which you got as a result of those tests?

A Productive index shows the capacity of your wells to produce.

Q What was the PI on State B1 well?

A 16.56.

Q On State C1 what was the PI?

A 40.96.

Q At what rate of production per 24 hours?

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A 1,556.6 barrels.

Q State C2 PI?

A 26.2.

Q Rate of production?

A 1,596 barrels per day.

Q State C3 PI?

A 6.54.

Q Rate of production?

A 1,026.7.

Q Do you consider those PI's very good or average?

A Very good.

Q Unusual in West Texas, Eastern New Mexico area?

A Yes, sir, I think they are.

Q I hand you a graph and ask you what that shows?

A This is a graph of the tabular data of <sup>the</sup> /PI's taken on

Texas Pacific Coal and Oil Company wells.

Q It shows the same wells that are shown on the tabulation?

A Yes, sir.

Q Only shows PI's graphically, is that correct?

A That is true.

MR. ADAIR: We offer that as Texas Pacific Exhibit No. 2.

MR. SPURRIER: Without objection it will be received.

MR. ADAIR: If the Commission please, Mr. Hardy has prepared

or had prepared under his supervision a tabulation of the arithmetic average bottom hole pressures surveys as we have recorded them. They show a slight difference from the tabulation of the surveys made by the Amerada but the result is the same. They show an increase in the last six months of 33 pounds instead of 8 pounds but we used the Engineering Committee's Report for the October '51 survey rather than <sup>the</sup> figure used by Mr. Christie for Amerada purely for whatever help it will be to the Commission. We offer that in evidence as Texas Pacific's Exhibit No. 3.

MR. SPURRIER: Without objection it will be received.

MR. ADAIR: That is all I have, Mr. Spurrier.

MR. SPURRIER: Anyone have a question of this witness? If not the witness may be excused.

(Witness excused.)

MR. SPURRIER: Any more testimony in this case?

MR. ADAIR: That is all as far as Texas Pacific is concerned.

MR. SPURRIER: Any comments?

MR. CAMPBELL: I would like to make a statement on behalf of Texas Pacific Coal and Oil Company. Jack M. Campbell, Roswell, New Mexico. I will read this into the record.

It is an opinion of Texas Pacific Coal and Oil Company that each common source of supply must be considered by the Commission independently. As to the nature and use of the reservoir energy

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the productive capacity of the wells, the spacing of those wells, and the protection of correlative rights. The evidence was obtained after three years experience in the drilling and production of 19 wells in the Bagley-Siluro-Devonian common source of supply. Indication was that the reservoir energy is a strong water drive which at the present rate of to approximately one and a half times the normal unit allowable has no decline to any depreciable degree.

The field has 19 wells in the Devonian and only one exception to the present spacing order. Rights are apparently being fully protected. The evidence shows that no waste is taking place. This common source of supply appears to be one which will justify the extension of the present order to make possible proper continued development for this pool.

MR. BOND: I would like to make a statement. L. H. Bond speaking for Stanolind Oil and Gas Company.

We have no material interest in the properties in this pool but we do have extensive drilling and producing operations in New Mexico, and feel that the decision that the Commission renders in this case might well effect our operations in the state.

Our data based on deep well drilling in New Mexico, bears out that the well costs figures that were submitted by Amerada are certainly reasonable for wells to this depth. We feel that our

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operators will certainly be encouraged to make investments of almost a quarter of a million dollars per well if they can expect proper showing to be granted reasonable unit sizes, such as 80 acres. Of course, this would be dependent upon showing the wells would drain 80-acres. In our opinion, wells will drain considerably in excess of that amount where the reservoirs are continuous. In some fields, of low permeability, of course, the time required to drain that area might be excessive, but in a field such as Bagley where Mr. Hardy has testified that PI's ranged from 6 to as much as 40, that would not be the case. It seems to us that the ability of wells to drain large areas is being realized to an increasing extent in the industry.

I believe Mr. Christie referred to the Interstate Oil Compact Commission's Bulletin. I would mention one other recent publication. The book, "Petroleum Conservation", published in 1951 by the American Institute of Mining and Metallurgical Engineers. In this book, well spacing is discussed for the various types of reservoir control and the conclusion of the article on well spacing is that, if sufficient wells are drilled to permit the desired producing rate without undue pressure differentials, additional wells will have little or no effect on ultimate oil recovery.

The indications are that in most oil reservoirs developed to

date the total number of wells drilled has substantially exceeded the number actually required to obtain efficient oil recovery.

The other consideration is, of course, the conservation of materials. It has been testified that from 175 to 180 tons of steel are required to equip a well in this field. If 80-acre development is maintained as has been requested, this steel could be used in finding new oil reserves.

In conclusion, I would like to concur with the recommendations of Amerada and Texas Pacific that this 80-acre order be maintained in effect. Thank you.

MR. SPURRIER: Anyone else?

MR. WALKER: Dow Walker, Fort Worth, for Gulf. I have a statement here I will give you in a minute although I don't feel we can add anything to the testimony that has been given, we would like to go on record with a statement and say that Gulf does have acreage within the productive limits of the pool and consequently are vitally interested in the case.

We have not at this time available detailed information regarding the Bagley-Siluro-Devonian reservoir but we too have examined the reservoir pressure performance and find that natural sources of reservoir energy are maintaining the pressure very close to that originally existing. We find no justification at this time for the institution of pressure maintenance or second-

ary recovery operations in the field.

Gulf does not now have information available which would conclusively show whether one well is capable of draining 80 acres in this reservoir. However, there is certainly no indication to the contrary at this time, and it is respectfully recommended that the Commission grant an extension to the present order until there is sufficient evidence to determine whether or not the reservoir is being adequately drained by 80 acres.

We would like to concur with recommendations of Texas Pacific and Amerada in this case.

MR. SPURRIER: Anyone else?

MR. FOSTER:: Foster for Phillip Petroleum Company. We don't have any acreage in this field under consideration, but many of the facts that have been presented here we are in sympathy with. We are in favor of 80-acre spacing wherever the reservoir conditions permit. We want to go on record as favoring generally 80-acre spacing. We think it is sound in principle and that eventually the Commission here is going to recognize, more and more in this State, the principles back of 80-acre spacing.

MR. SPURRIER: Anyone else? If not the cases will be taken under advisement. The next cases on the docket which are consolidated for the purpose of the hearing, Case 314 and 319.

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) SS.

I, ADA DEARNLEY, Notary Public and Court Reporter  
do hereby certify that the foregoing and attached Transcript  
of Proceedings in Case Nos. 249 & 315, before the Oil Conservation  
Commission, State of New Mexico, at Santa Fe, on April 15, 1952,  
to be a true and correct record to the best of my knowledge,  
skill and ability.

DATED at Albuquerque, New Mexico, this 22<sup>nd</sup> day of  
April, 1952.

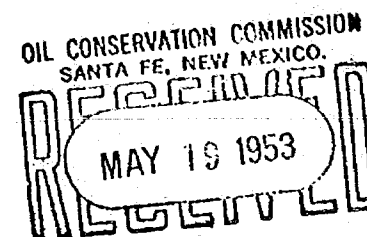
Ada Dearnley  
REPORTER

My Commission Expires:  
June 19, 1955

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BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO



CASE 249: Application of the Commission on its own motion for an order directed to Bagley-Siluro-Devonian Pool operators to show cause why pool shall not be placed on a 40-acre spacing pattern with allowable adjustment. When the case was postponed last month, Order R-69-B (interlocutory) was issued to cover the interim period until regular order can be written.

TRANSCRIPT OF HEARING

May 19, 1953  
Date

BEFORE: Honorable Ed. L. Mechem, Governor  
Honorable E. S. Walker, Land Commissioner  
Honorable R. R. Spurrier, Director, OCC

STATE OF NEW MEXICO )

COUNTY OF BERNALILLO) ss

I HEREBY CERTIFY That the within transcript of proceedings before the Oil Conservation Commission is a true record of the same to the best of my knowledge, skill, and ability.

DONE at Albuquerque, N. M., this 26th day of  
May 1953.

My Comm. Ex.:  
August 4, 1956

E. E. Greeson  
Notary - Reporter

COMMISSIONER SPURRIER: The next case on the docket is Case No. 249.

(Mr. Graham reads the call of the case.)

MR. SETH: If the Commission please, Oliver Seth appearing for the Amerada Petroleum Corporation.

This matter began in December, 1950, with the application of Amerada for 80-acre proration units and regular spacing in the Bagley-Siluro-Devonian Pool in Lea County. A hearing was held by the Commission in April 1951 and a temporary order, R-69, was entered at that time providing for 80-acre proration units and uniform spacing.

In April of the following year, upon application of Amerada and the Commission upon its own motion, the matter came up again at the expiration of the year's order. At the time a hearing was had, and the Commission entered an order extending the previous one for an additional year. That was Order R-69A.

That order expired in April of this year. In the April hearing the matter was continued for one month until this hearing on the interim order. In order to consolidate the record in this case, I would like to present four exhibits.

These exhibits, as indicated, are to make it

more convenient for the Commission in this hearing and to consolidate the record.

Exhibit A is a copy of Order R-69A. Exhibit B is a copy of Order R-69. Exhibit C is a copy of the notice. Exhibit D is the interim or interlocutory order.

We would like to move the admission of these exhibits.

COMMISSIONER SPURRIER: Without objection, they will be received.

MR. SETH: I would like to introduce to the Commission Mr. Woodward and Mr. Maxwell of the Amerada Petroleum Corporation, who will conduct the hearing.

MR. WOODWARD: If the Commission please, my name is John Woodward, appearing for the Amerada Petroleum Corporation. This is Amerada's written statement in Case 249.

At this time I would like to swear our witnesses appearing in this case, Mr. John A. Veeder and Mr. R. S. Christie.

(Witnesses sworn.)

MR. WOODWARD: At this hearing, it is Amerada's contention Order R-69A should be extended for a period of one year from this date, and for cause Amerada would show the following: First, that the Commission has twice found the evidence justifies the temporary order for one



year. The temporary order R-69 and R-69A has not resulted in waste or prejudiced correlative rights.

The same considerations justifying these orders still apply to a further extension of 80-acre spacing in the Bagley-Siluro-Devonian Pool for an additional period of one year.

Developments in the pool since April 1952 also support an extension of Order R-69A in all its particulars.

40-acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells.

To save time and establish a more complete predicate for consideration of the question now before the Commission, it is requested that the records of previous hearings in this case be incorporated by reference and made a part of this record.

(Off the record.)

COMMISSIONER SPURRIER: Without objection, it will be granted.

MR. WOODWARD: The first witness in support of Amerada's position is Mr. John A. Veeder. He is a geologist for the Amerada Petroleum Corporation.

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JOHN A. VEEDER,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WOODWARD:

Q Will you state your name, please?

A John A. Veeder.

Q Where do you live, Mr. Veeder?

A Midland, Texas.

Q By whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity?

A District geologist.

Q Have you previously testified before the Commission in your capacity as geologist or expert witness?

A I have.

MR. WOODWARD: Does the Commission accept Mr. Veeder's qualifications?

COMMISSIONER SPURRIER: It does.

Q Mr. Veeder, I hand you what has been marked Exhibit E. Can you state what it is, please?

A Exhibit E is an aerial map of the Bagley field showing all the Devonian producers, and it also shows the productive limits of the Devonian, which is within the hachured outline.

Q Have you previously examined Schlumberger electrical logs for Devonian wells in this area?

A I have.

Q Which wells? Would you indicate the wells you have examined?

A On all Devonian and Pennsylvanian producers and dry holes in the Devonian-Bagley pay field.

Q Those were Schlumbergers for the wells completed prior to the hearing of last year?

A That's right.

Q I hand you what has been marked Exhibit F. Will you state what it is?

A Exhibit F is a Schlumberger on the Amerada No. 1 or BTN Devonian producer completed since the last hearing last year.

Q That is the only Schlumberger you have examined since the hearing last year?

A That's right.

Q I hand you what has been marked Exhibit G. Will you state what it is, please?

(Off the record.)

A Exhibit G is the data production sheets of our Devonian producers in the Bagley field. On these sheets we have shown the well name, have indicated the top of the Devonian, the top of the Devonian pay, and also the

production and completion.

Q Mr. Veeder, I hand you what has been marked Exhibit H. Will you state what that is, please?

A Exhibit H is a structure map. On top of the Devonian of the Bagley field. This is a contoured map at -- contour interval is fifty feet.

Q I hand you what has been marked Exhibit I. Will you state what it shows?

A Exhibit I is a structure map of the Bagley field on top of the Devonian pay at contour interval in this instance also fifty feet.

1b Q Will you please explain why it was necessary to have a contour map on top of the pay and on top of the Devonian?

A In the Bagley field, the Devonian reservoir is capped by an impervious bed. Because of that, we have drawn the two structural maps.

MR. WOODWARD: Exhibits E to I are offered in evidence.

COMMISSIONER SPURRIER: Without objection, they will be received.

(Off the record.)

Q Mr. Veeder, based on the Schlumbergers you have examined, the completion data sheets and the structural maps, what in your opinion is the probable productive

limits of the Devonian at Bagley?

A The probable productive limits is that area enclosed within the hachured lines in Exhibit E.

Q And this is the area now covered by Order R-69A?

A That's right.

Q What is the acreage of that area?

A That area is approximately 2400 acres.

Q How many productive wells have been completed in the Devonian at Bagley to date?

A There have been twenty-one Devonian producers completed.

Q Whose wells are those?

A The Amerada has sixteen Devonian completions. Texas-Pacific has five.

Q And how are these Devonian wells indicated on the Exhibit E?

A On Exhibit E the Devonian wells are indicated with the red circle. The Pennsylvanian wells are indicated by the green circle.

Q Mr. Veeder, the two structural maps, Exhibits I and H, were prepared under your direction and supervision?

A That's right.

Q Will you describe the geological structure that is indicated by those maps?

A Both the structure map on top of the Devonian and

the Devonian pay indicate an asymmetrical anticlinal structure.

Q Do you know of any structural irregularities in the Devonian at Bagley that would prevent movement or absolutely obstruct movement of the oil through the pay?

A I know of none.

Q Have you examined cuttings and cores from Devonian wells at Bagley?

A I have.

Q From your examination of the Schlumbergers and from those cuttings and cores, what in your opinion is the porosity of the pay at Bagley?

A The Devonian reservoir has very good vuggy and fractured type porosity. And it is my opinion that this porosity is continuous and connected throughout the reservoir.

Q Then, Mr. Veeder, from a geological standpoint, is there anything in the structure or lithology of the Devonian which would indicate a need for smaller spacing units than established by Order R-69A?

A There is none.

Q Have you obtained any additional geological information since the hearing in May of last year that would show any change of condition that would prevent an extension of the order?

A I have not.

Q You have read the written statement submitted by Amerada at this hearing?

A I have.

Q Is that statement true and correct to the best of your knowledge?

A It is.

MR. WOODWARD: I have no further questions.

COMMISSIONER SPURRIER: Does anyone have a question of this witness?

MR. MACEY: Mr. Woodward, I would like to ask Mr. Veeder some questions, but a lot of it would be concerned with Mr. Christie's testimony which might later be put on and I would like to reserve the right to have Mr. Veeder recalled after Mr. Christie's testimony is entered, if that is in order.

COMMISSIONER SPURRIER: Very well. Does anyone else have a question? If not, the witness may be excused.

(Witness excused.)

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R. S. CHRISTIE,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WOODWARD:

Q Will you state your name, please?

A R. S. Christie.

Q Where do you live?

A Tulsa, Oklahoma.

Q By whom are you employed, Mr. Christie?

A Amerada Petroleum Corporation.

Q In what capacity?

A Petroleum engineer.

Q Have you previously testified before this Commission as a petroleum engineer or as an expert witness?

A Yes, sir, I have.

MR. WOODWARD: Will the Commission accept Mr. Christie's qualifications?

COMMISSIONER SPURRIER: They do.

Q Mr. Christie, what is the average oil-gas ratio for all wells in the Bagley-Devonian Pool?

A The average oil-gas ratio for the Devonian-Bagley Pool is approximately thirty cubic feet per barrel.

Q What is the gravity of the oil?

A Approximately 46 degrees API.

Q Mr. Christie, I hand you what has been marked Exhibit J. Will you state what it is, please?

A Exhibit J is a graph showing the monthly oil production, the cumulative oil production, the monthly oil production, the bottomhole pressure and the number of wells



in the field.

Q Mr. Christie, what was the initial pressure at Bagley?

A The initial reservoir pressure in the Bagley field was 4,285 PSI at a datum of minus 6700 feet.

Q What was the average bottomhole pressure of all wells in April 1951?

A The average bottomhole pressure of all wells in April 1951 was 4,258 pounds. A year later the average pressure was 4,213 pounds. And as of April 1, 1953, the average pressure was 4,155 pounds, which indicates a total drop from the initial of 130 pounds. During that interval the total production, the cumulative production, has been approximately four and a half million barrels.

2 Q Will you state what Exhibit J would indicate to you about the form of reservoir energy present at Bagley?

A The bottomhole pressure decline for the amount of production that has been produced, including oil and water, indicates a very active water drive.

Q You say very active water drive?

A Yes, sir.

Q And this water drive, is it augmented by any gas in solution to any appreciable extent?

A As I testified previously, the gas-oil ratio is only thirty cubic feet per barrel; therefore, there is

very little help from the gas, although it does slightly help the drive.

Q At the present time, is there any need, in your opinion, for secondary recovery operations at Bagley?

A No, sir.

Q Mr. Christie, will you state what Exhibit J indicates to you about the permeability of the Devonian reservoir?

A Actually, there is no data on there that indicates the permeability directly. But the bottomhole pressures are reasonably uniform and they build, have a very rapid build-up after shut-in, which indicates a high degree of permeability.

Q Have these Devonian wells had a uniform capacity to produce?

A Yes, I think they have.

Q Would that tend to substantiate or have any bearing on your opinion concerning the permeability of the Devonian at Bagley?

A It further indicates a good permeability, I believe.

Q Mr. Christie, given an anticlinal structure without structural irregularities, and a reservoir of continuous porosity and good permeability containing a high gravity oil under an active water drive, what area

in your opinion will be efficiently drained by one well in the Devonian at Bagley?

A Well, in my opinion one well will drain at least 80 acres.

Q What is the average cost of wells completed in the Devonian at Bagley?

A The average cost of Amerada wells drilled to the Siluro-Devonian is \$220,000 per well. This, of course, is what you might call the direct cash outlay, and doesn't include any geophysical work or geological work or reconnaissance or anything like that. It is actual cash outlay.

Q How much steel is needed to complete these Devonian wells?

A Approximately a hundred and seventy-five to eighty tons per well.

Q How much steel was used in completing the average well drilled by Amerada last year?

A Amerada completed 206 producing wells last year at an average depth of 8,064 feet, which is considerably above the average for the nation. And in completing those 206 wells, we used an average 122.6 tons of steel.

Q As compared with the average at Bagley.

A As compared with the average of 178 to 180 at Bagley.

Q Then, in your opinion, will 80-acre spacing and the continuance of Order R-69A tend to promote economic operation at Bagley?

A In my opinion, it will; yes, sir.

Q In your opinion will it promote efficient use of materials?

A Yes, sir.

Q Mr. Christie, what is the allowable fixed by Order R-69A?

A One and a half times the normal 40-acre allowable with the deep pool adaptation.

Q Has this allowable resulted in coning or any other form of underground waste?

A We haven't noticed any, no, sir; there hasn't been any apparent, at least.

Q In your opinion would an extension of the order cause waste?

A No, I don't believe it would.

Q It would tend to reduce the hazard of waste in any way?

A Yes, it would. The drilling of any well will naturally -- It is attendant with hazard. Most of us are familiar with those; blowouts and fires and so forth. So that at any time you increase the number of wells drilled, you increase hazard by that proportion.

Q To your knowledge, is the operation of Order R-69A today breaching correlative rights in the field?

A No, I don't believe it has.

Q Mr. Christie, considering in your opinion one well will efficiently and economically drain 80 acres and not result in waste or breach correlative rights, is there any reason in your opinion for setting 40-acre spacing at Bagley at this time?

A No, sir.

Q Mr. Christie, you have read Amerada's written statement in this case?

A Yes, sir, I have.

Q Is that statement true and correct to the best of your knowledge?

A Yes, sir.

MR. WOODWARD: That is all I have.

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#### CROSS EXAMINATION

BY MR. WHITE:

Q Mr. Christie, you gave oil-gas ratios on the average as being thirty cubic feet per barrel. What is the difference between the oil-gas ratio as between the various wells, what is the greatest variance?

A They vary very, very little. I would -- I don't have the figures exactly on hand -- but I would say they

vary between, oh, maybe twenty to forty, something like that. They are very low, all of them.

Q And they are uniform?

A Yes, reasonably uniform. You must understand when they are that low, they are very hard to measure. So that you have ten percent error in your measurement, you have quite a variation in your gas-oil ratio at that low figure.

Q Are any of these wells producing water?

A Yes, sir.

Q And what amounts do the various wells produce?

A I believe there are nine wells in the field producing water. The water production for the month of March was approximately 35,000 barrels. The percentage varies from -- Well, of the eight wells shown on this tabulation I have, they vary from seven percent to eighty-one percent -- ninety percent, excuse me.

Q In view of the testimony as to structures that has been introduced, how do you account for the difference of seven percent as against ninety percent?

A Probably depends on structural position. If low on the structure and near the water table, they will produce more water.

Q And in your opinion the one producing ninety percent water, that well has no evidence of coning?

A No, I don't think so. It is inevitable when you have a water drive field you are going to have to produce water sometime during the life of the field.

2b

Q What variance is there as to the bottomhole pressures?

A The last survey, the pressures varied from 3,481 pounds, which is an abnormally low well -- It has always had a low bottomhole pressure. The maximum pressure was 4,232 pounds. If you delete that one particular well that has always had a low bottomhole pressure, the variation is much less. It varies from approximately 4,038 to 4,232.

Q Are all these wells meeting their allowable?

A No, sir.

Q How many of them are meeting their allowables?

A I believe there are five wells on the schedule that are not making full allowable.

Q Are they pumping or flowing?

A The majority of them are on gas lift. I mean the ones that are not making the top allowable are on gas lift.

MR. WHITE: That's all.

COMMISSIONER SPURRIER: Anyone else have a question of Mr. Christie?

MR. GRAHAM: Let me ask one question.

BY MR. GRAHAM:

Q Mr. Christie, what is your conception of the term "correlative rights", for the record?

A My conception of correlative rights is everybody get what they are entitled to as near as you can devise a formula for that.

Q The interested owner, for instance, he shouldn't injure the reservoir unnecessarily.

A No, sir; and I don't think he wants to injure the reservoir.

Q Is there anything in the operation of that pool that would indicate waste as defined by the statute, that is, underground?

A I don't believe so.

Q What is the drainage situation there for other interest holders, the royalty holders, for instance? Are they getting their fair share?

A We assume they are, based on the Commission's orders, which we are operating under.

COMMISSIONER SPURRIER: Anyone else?

MR. ANDERSON: Yes.

BY MR. ANDERSON:

Q Mr. Christie, I take it that there is no attempt to show that the field cannot be developed on a 40-acre pattern and have a profitable return per well; is that



correct?

A No; we are not attempting to prove that. We feel that any additional wells would be unnecessary wells. We don't need any more wells to get the oil that is in place.

Q But the reserves are fairly substantial per acre, I gather from your testimony.

A Well, on the average, yes, they are.

Q Yes.

A But when you talk about the economical production as compared to your cost, why, you have to take into account all dry holes and marginal wells that will never pay out. You can't single out any one well and show it will produce twice as much oil as you need to pay the well out. You have to take an average figure.

COMMISSIONER SPURRIER: Anyone else? Mr.

Macey.

BY MR. MACEY:

Q Mr. Christie, Mr. Walker has never sat in on a Bagley 80-acre spacing case before. I wonder if you would explain to him what you meant by the word "coning"?

A Coning is caused by producing a well at too high a rate, and pulling the water in at an accelerated rate, which tends to cone into your well bore and possibly trap off some oil if you pull your water in too fast.

Q Now, can you tell me --

A That is a very difficult thing to do where you have an active water drive, because to cause coning you have to produce at a very high rate to cause coning if your permeability is high.

Q Do you happen to know offhand what the original water-oil contact was in the Bagley Pool?

A I don't have that figure on the tip of my tongue. Mr. Veeder may have it.

(Off the record.)

MR. VEEDER: Well, I can give you an approximate figure. Will that do? You see, the discovery well, the BTA, we took the water and the plugged-back depth on that well is 10,965, which would be above your water-oil contact.

MR. MACEY: What would that be converted to subsea datum?

MR. VEEDER: I beg your pardon?

MR. MACEY: What would that be on a subsea datum?

MR. VEEDER: The subsea datum would be minus 6,719.

MR. MACEY: Mr. Veeder, I was aware of the fact that on the initial hearing in this case that the water-oil contact was set at minus 6,775. And, also, don't you have wells considerably deeper than 6,719 that are

not producing water today?

MR. VEEDER: That's right; that figure I gave you I told you was above the water-oil contact. This is a rough figure I gave you.

MR. MACEY: You mean to tell me the Amerada hasn't determined the water-oil contact pretty accurately?

MR. VEEDER: I think we gave it in previous hearings.

MR. MACEY: Was it 6,775? That is what I want to find out.

(Off the record.)

MR. WOODWARD: If the Commission please, Mr. Veeder, you might identify that transcript. That is the transcript of the prior hearing of this case, which has been made a part of this record.

MR. VEEDER: This is Case 249A which was read and presented before the Oil Conservation Commission July the 24th, 1951. The water-oil contact at the Bagley field was given at minus 6,745.

MR. MACEY: Do you know offhand what that was based on?

MR. VEEDER: Based on interpretation of samples, cores, drill stem tests, every means we had to determine water-oil contact.

MR. MACEY: In connection with present producing characteristics of the field, the Mathers No. 1-A, which is, I believe, located in the northwest of the northeast of Section 3, is that well producing water?

MR. CHRISTIE: Mathers 1-A is producing as of April, '53, producing ten percent.

MR. MACEY: Can you tell me what the lowermost water in that well bore that is exposed to the well bore, and convert it to subsea datum?

MR. VEEDER: On the Mathers 1-A?

MR. MACEY: Yes, sir.

MR. VEEDER: The total depth is 10,995, which is a minus 6,738.

MR. MACEY: You have got a plug-back depth, then?

MR. VEEDER: Our plug-back depth was 10,966, minus 6,709.

MR. MACEY: And that is the lowest point open to the bore hole at the present time?

MR. VEEDER: At the present time.

MR. MACEY: In other words, the original water-oil contact, which was minus 6,745, you are now producing water from a depth of minus 6,709; is that correct?

MR. VEEDER: That is apparent.

MR. MACEY: Mr. Veeder, are you familiar with the Texas-Pacific Coal & Oil Company completions?

MR. VEEDER: Well, I am as far as the Schlumbergers, the samples and completion reports they have turned in.

MR. MACEY: Can you tell me whether the Texas-Pacific Coal & Oil Company No. 3 State C, which is located in the northwest southwest of Section 2, what the lowest point that that well is exposed to the bore hole is? Whether total depth of bottom perforations.

MR. VEEDER: The bottom perforations on the Texas-Pacific 3C State, 10,994, which is a minus 6,740.

MR. MACEY: Is that well producing water?

MR. VEEDER: I don't have that knowledge.

MR. MACEY: Mr. Christie, do you know whether that well is producing water in any appreciable quantities?

MR. CHRISTIE: No, I don't know it.

MR. MACEY: I would like the Commission to take notice of the fact that the Texas-Pacific wells produce, if any, they produce extremely small volumes of water. As required by Order 69A, the operators are required to submit production records on the field. And they cooperated with the staff of the Commission very generously. But the fact remains that the record will show that Texas-Pacific No. 3, State C, doesn't produce water from

the depth of minus 6,740, where we have got a well within approximately three-quarters of a mile producing water from a higher subsea depth of 6,709.

MR. CHRISTIE: Mr. Macey, I don't believe that is unusual. It is very possible to have wells on the edge producing at a higher level because the water may be traveling upstructure through your permeability. And if you have a water drive from any particular side of your field, you are more apt to have water from that direction than some other part of the field.

MR. MACEY: The water drive is migrating from the west.

MR. CHRISTIE: We have more wells producing water from the west, and we assume that may be the case.

Q (By Mr. Macey) You say a well on the edge of the field. How far is the 1-A Mathers from what you determine is the edge of the field?

A (By Mr. Christie) It is about the third location from the west edge.

Q You mean about the third 40's location?

A Three 40's.

Q In connection with your testimony is the BTA producing water?

A The BTA just started producing water very recently.

Q What is the lowest water open in that? I think you gave it previously.

MR. VEEDER: That was minus 6,719.

Q Any other wells around BTA No. 1 producing water?

A BTD No. 1, which is a southwest offset -- No; it isn't producing any water. Nothing very close there, Mr. Macey.

Q The BTA is pretty much on the east side of the field, isn't it?

A Yes.

Q The BTA, according to my interpretation, is located two 40-acre locations east of the Texas-Pacific Coal & Oil Company No. 3 State C.

A One location.

Q You mean it is a direct offset?

A You are speaking of the TP No. 3B?

Q 3C.

A Oh, 3C.

Q And the BTA.

A That's right; it is two locations west. The TP well is two locations west.

Q How do you account for the fact that the BTA is producing water on the east side of the field at a higher structural position than the Texas-Pacific well --

k  
As a matter of fact, I think that the record will show that the well is completed considerably higher. How do you account for that?

3b A It quite often happens when you drill a well into water and plug back, you won't always get a good shutoff. In time, it might show up. That happens quite often. Excuse me. What is the percentage on that?

(Off the record)

A VOICE: Three per cent.

Q Mr. Christie, would you say that the water drive is a very decisive factor in the overall recovery of the oil from the Bagley-Siluro Devonian Pool?

A Yes, sir.

Q Don't you think the effective control of withdrawal from that pool of oil and water are very essential to overall recovery?

A Yes, sir.

Q Isn't it a fact that the monthly water production from the equivalent number of wells, which is I believe 21, has jumped from - I have got to look the graph over here, I guess. - has virtually doubled in the past nine months?

A In the last nine months?

Q Yes. Comparing June with April.



A Yes; the graph so indicates.

Q Do you think that is conducive - I agree you have got to produce water in a water-drive field. But I would like to know if you think the doubling of the water production is an indication of good recovery methods, especially in view of the fact that the water is a prime consideration in the overall recovery.

A Oh, I don't think it is alarming. A thousand barrels a day from a reservoir of that size, a little over one thousand, isn't excessive, I don't believe. As long as your bottomhole pressure isn't being pulled down by reason of the withdrawal, I don't believe you are injuring it appreciably.

MR. MACEY: Could we have a recess for a few minutes, Mr. Spurrier?

COMMISSIONER SPURRIER: Very well. We will recess for five minutes.

(Recess)

COMMISSIONER SPURRIER: The meeting will come to order, please.

Mr. Macey and Mr. Christie.

Q (By Mr. Macey) Mr. Christie, if you can't possibly answer this next question, why, maybe you can obtain the information. But, at one time the BTB No. 3,

which is in the southeast of Section 35, that well produced water at one time, did it not?

A Yes, sir.

Q And the well was worked over and recompleted; is that correct?

A Yes, sir.

Q Can you furnish the Commission with the recompletion information?

(Off the record.)

A The well was originally, as BTD No. 3, was originally completed at minus 6,710, an open hole. The well was plugged back to minus 6,623. And the present producing interval is minus 6,481, 6,568, and minus 6,563 to minus 6,578, and minus 6,593 to minus 6,612. So that the overall producing interval now is minus 6,481 to minus 6,612. The plug-back depth was minus 6,623. And by doing that, the water was shut off and it is now a clean oil well.

Q Producing pipe line oil.

A Pipe line oil.

Q This question probably should be directed to Mr. Veeder. In connection with the Devonian, when drilling wells in the Bagley, this top, what you call the top of the Devonian, and then go through what you call a cap zone; is that right?

MR. VEEDER: That is correct.

Q What is that cap zone?

MR. VEEDER: A chirty limestone. And the Devonian reservoir is a Dolomite and a chirty Dolomite.

Q Has it ever been cored?

MR. VEEDER: Yes.

Q Does it have any porosity or permeability?

MR. VEEDER: In the cap zone?

Q Yes, sir.

MR. VEEDER: Very, very little porosity in the Devonian cap.

Q Do the cores indicate any presence of any oil or gas?

MR. VEEDER: If so, it would be very isolated.

Q Well, how come Amerada recompleted the BTD No. 3 in the top cap?

MR. VEEDER: What are those figures again you had, Bob?

MR. CHRISTIE: Minus 6,481 was the top.

MR. VEEDER: What is the base?

MR. CHRISTIE: 6,612.

MR. VEEDER: Well, that 6,612, that would be 82 feet below the base of the cap; is that right?

Q Yes, that's right. But what about the 6,481?

MR. VEEDER: That is -- I had nothing to do with that perforation. That is entirely production and

they wanted to be sure they included everything. And it is just the method of perforating.

Q They included 49 feet of the top cap. And they may have had a purpose in it. You can't tell me Amerada goes in there shooting holes in the casing for the purpose of getting all inclusive.

MR. VEEDER: Well, it wasn't selective perforations. It was perforating one entire zone. And I wasn't consulted on that reperforation.

MR. WOODWARD: If the Commission please, I think Mr. Christie can explain Amerada's practice.

MR. CHRISTIE: We have a field man here. We will ask the field man.

MR. MILLIKIN: Mr. Macey, I think I can answer that. I don't remember the incident specifically. We have been fortunate enough sometimes to get some oil where there wasn't any. And, as far as I know, that cap has never been touched prior to the time this was perforated. I think it was perforated just to prove that the other evidence we have is correct. And having tested it, we have confirmed the fact that our Schlumbergers and electric logs and our cores show there is no production there. I think we are satisfied. But inasmuch as we were working it over, there was an opportunity to confirm our prior information, and it was so

perforated. And when we went into the lower perforations, there was no advantage in shutting those off. There wasn't anything there to hurt anything, and no reason to try and squeeze it.

COMMISSIONER SPURRIER: Do you agree with that, Mr. Christie?

MR. CHRISTIE: It sounds reasonable; yes, sir.

MR. WOODWARD: I don't believe I have anything more right now.

COMMISSIONER: Does anyone else have a question of either Mr. Christie or Mr. Veeder?

MR. ADAIR: Mr. Chairman, my name is John Adair representing the Texas-Pacific Coal & Oil Company.  
BY MR. ADAIR:

Q Mr. Christie, there is nothing unusual at all, or alarming, is there, in the fact that this field is producing some water?

A No, sir; it is customary for any water-drive field.

Q In order to produce oil, you are going to have to produce water?

A Yes, sir; and during the life of the field.

Q And that would be true, regardless whether on 80-acre or 40-acre spacing?

A Yes, sir.

Q And that would be true, regardless of allowable, set as the Commission has set it at one and a half times the 40-acre allowable for that depth, or whether it was set at some higher figure or lower figure?

A That is correct.

Q You wouldn't expect -- In fact, you might produce percentagewise, produce more water at a lower allowable than a higher allowable; is that true?

A It could be possible.

Q You have seen it happen in other fields, have you not? Where the water production, percentagewise, went up compared with the oil when you reduced the allowable?

A It is possible for a short time. I don't know whether it would remain that way definitely or not.

Q And the two wells Mr. Macey interrogated you and Mr. Veeder about are plug-backs, drilled into the water and plugged back?

A Yes, sir.

Q And it isn't at all unusual for those wells to come along at a later date and begin to make water?

A No, sir.

Q Very often happens?

A Yes, sir.

Q Particularly in a water-drive field where you

have tremendous pressures and the pressure is being more or less maintained.

A Yes, sir.

Q Do you recall at the hearing in April '51, I believe, when the Commission set this allowable at one and a half times the top unit allowable for the deep adaptation, that one of the reasons given to the Commission in requesting that allowable was that there was one exception in the field that was drilled on the 40-acre basis, and this one and a half times was set in order to protect the correlative rights and prevent lease drainage as a result of that exception; do you recall those instances?

A No, I don't. I would have to refresh my memory on that.

Q Does it sound familiar to you?

A No, it doesn't entirely.

Q Now, you have one well drilled on a 40-acre basis, do you not?

A Yes, sir.

Q And you have other wells drilled on an 80-acre basis?

A Yes, sir.

Q And to prevent drainage, you have to set this allowable, do you not, in order to prevent the 40-acre

tract from getting more than its share of oil from the field?

A I do remember we requested in asking permission to cut the 40-acre well down to two and a half what the others were producing.

Q And the Commission came up with this present order giving the 40-acre well its normal statewide allowable.

A Yes, sir.

Q And one and a half times for the other 80-acre wells.

A Yes, sir.

Q So far as the wells that are on pattern, most of the wells that are on pattern are not making water, are they; is that true?

A Well, there are nine --

Q With the exception of the one BTA well that was drilled into water.

A There are nine wells, Amerada wells, in the field making water.

Q I don't believe any of our wells are making water.

A Nine out of sixteen are making a small percentage, up to ninety percent.

Q Are you of the opinion waste will or will not



take place if the present order is continued for a temporary period of one year?

A I don't believe it will.

Q Do you think it is a reservoir of rather high quality?

A Yes, I think it is.

Q Do you have the figures on pound pressure drop per million barrels of oil produced? Somewhere in the neighborhood of thirty-seven pounds pressure drop per million barrels of oil produced?

A I don't have it calculated in that manner. But I do have a figure here of cumulative production to April 1st. The barrels per pound drop was approximately 35,000 barrels for each pound dropped.

MR. ADAIR: That is all.

COMMISSIONER SPURRIER: Anyone else? Mr. Woodward.

MR. WOODWARD: If there are no other questions on cross examination of this witness, I would like to have Mr. Christie have the opportunity of making a general statement and summary.

COMMISSIONER SPURRIER: I think we have another question.

MR. MACEY: Mr. Christie, are you familiar with our deep well adaptation system and why it was devised?

A Yes, sir.

MR. MACEY: You are familiar with the curve that was drawn up based on well cost?

A Yes, sir.

MR. MACEY: As progressively increasing with depth.

A Yes, sir.

MR. MACEY: Does it cost any more money to drill a well on a 40-acre tract than it does on an 80-acre tract?

A No, sir.

MR. MACEY: That's all.

COMMISSIONER SPURRIER: Anyone else?

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MR. CHRISTIE: I don't believe I have much more to add; except to say, in our opinion, the Bagley-Siluro-Devonian reservoir is a typical Devonian reservoir with an active water drive. And it isn't logical to expect the water encroachment not to be at an uneven rate. Due to the variation in the porosity and permeability, it is almost impossible to have a vertical rise to where you would have a level water table. So it isn't surprising you might find water in most any well in any part of the field if they are down close to the purported water table.

We believe the field is being operated efficiently and no physical waste being created, and correlative

rights are being protected as near as possible.

MR. WOODWARD: Mr. Christie, in your opinion there is nothing unusual about an irregular water table?

A That is my opinion.

COMMISSIONER SPURRIER: Does anyone else have a question of the witness? Mr. Macey.

MR. MACEY: Mr. Christie, I think it was in answer to Mr. Adair's question about the volume of water produced; if the overall production were reduced on the well that was producing water, and you say that the water volume would tend to remain the same, that is the volume, not percentagewise, the volume would remain the same or decrease with the oil production if cut down?

A I think temporarily it would probably be decreased. I don't know how long that would last.

MR. MACEY: In connection with that, if the allowable on the 80-acre spaced field, 80-acre spaced wells, there is one well that is an exception, but the regular pattern wells, if the allowable were reduced on those wells, would it affect water production on the other wells? I mean, aren't the wells making all the water from marginal right today?

A The majority of them are; yes, sir.

MR. MACEY: If the Commission decides to cut back the allowable on the top allowable wells, it wouldn't

affect the marginal wells, would it?

A It wouldn't affect oil production appreciably, I don't believe.

MR. MACEY: That's all.

MR. MAXWELL: I am Richard Maxwell, representing Amerada.

If the Commission please, I would like very briefly to conclude our case.

This matter we have been discussing today is not, as you gentlemen know, a question of first impression. R-69 and its extension R-69A have been very workable orders as demonstrated by the fact that they have worked very well in the last two years.

We have brought out today that operations in the pool over the last two years have fully confirmed the predictions we made as to the nature of the pool at the outset. We have shown this order has not resulted in waste and the information that we have and our engineering conclusions therefrom indicate that the extension of the order will not result in waste in the future.

The order has permitted uniform development in the Bagley field. We believe that we have shown it has promoted conservation of effort, energy, materials, equip-

like to make a statement summarizing the general position of Texas-Pacific Coal & Oil Company in this case.

Jack Campbell from Roswell, New Mexico.

I will read it and hand it to the ailing reporter.

The Bagley-Siluro-Devonian field has been developed from its inception upon an 80-acre basis. The original order and subsequent orders were as exceptions to the state-wide spacing rule.

We believe that spacing of wells must be determined upon evidence available in each separate pool, which is the method now being used by the Commission. Evidence presented here relative to the production history of this pool has convinced us that this is an exceptional oil pool and that the present spacing and rate of production does not result in physical waste. With regard to correlative rights, there is only one exception to the spacing pattern in this pool and in that case a proper allowable adjustment has been made.

We believe that the continuation of this order for another year will not result in present or ultimate waste and correlative rights will not be adversely affected.

COMMISSIONER SPURRIER: Anyone else? If there is nothing further, we will take the case under advisement and go on to the next case.

ment and money. Conversely, 40-acre spacing in Bagley would result in the drilling of unnecessary wells, and obviously would result in expenditure of effort, money, equipment not necessary to produce the oil in the Bagley field.

The initial basis for this temporary order is even stronger today. The conditions that were put before the Commission to sustain the issuing of the temporary 80-acre order in Bagley have been fully confirmed. And we have shown that there is a strong basis today for continuing this 80-acre order in the Bagley field.

COMMISSIONER SPURRIER: Anyone else to be heard in this case?

MR. ADAIR: Mr. Chairman, in the interest of time, rather than having one of our witnesses sworn, I would ask permission to offer in evidence some Texas-Pacific exhibits which show the result of interference tests taken in the field. Will you receive those without the necessity of putting on a witness?

COMMISSIONER SPURRIER: Without objection, they will be received.

MR. ADAIR: And also one PI test. That is -- these are labeled TP Exhibits 1 and 2.

(Off the record.)

MR. CAMPBELL: If the Commission please, I would

like to make a statement summarizing the general position of Texas-Pacific Coal & Oil Company in this case.

Jack Campbell from Roswell, New Mexico.

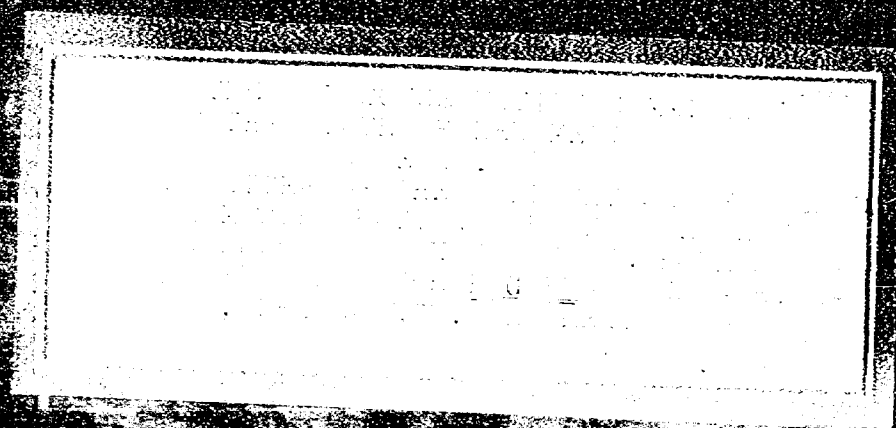
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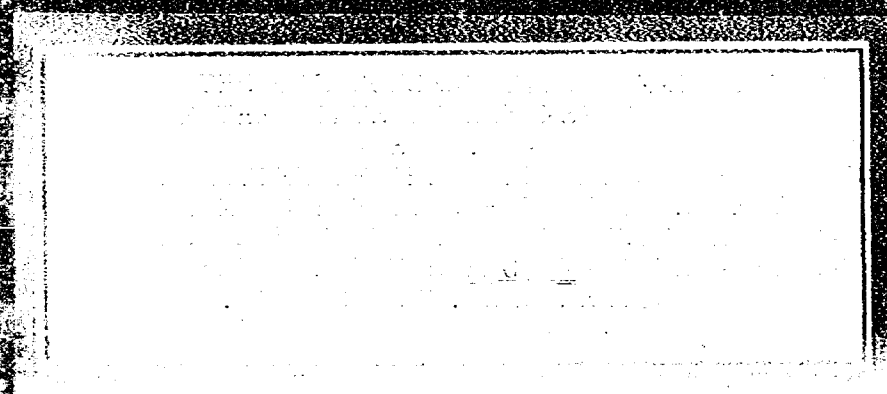
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8.  
4/5/52

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN POOL  
LEA COUNTY, NEW MEXICO

CASE NO. 249

(Consolidated w/Case 315)

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### STATEMENT OF FACTS

In August, 1949, Amerada filed its application to establish 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian pool in Lea County, New Mexico. (Case No. 191)

The discovery well, known as State BTA #1 (located in NW/4 SE/4 Sec. 2-12S-33E) had been completed in the Devonian formation at a depth of 10,770 to 11,000.

Caudle #1 (SE/4 NE/4 Sec. 10-12S-33E) had been drilled as a dry hole in the Devonian. Amerada, Mid-Continent Petroleum Corporation and Texas Pacific Coal and Oil Company were each then drilling a well in the area asked to be spaced.

The application asked that the spacing order cover an area comprising 3040 acres.

It was requested that all wells be located in the NW and SE quarter of each governmental quarter-section.

An exception was asked for the Mid-Continent well (SW/4 NW/4 Sec. 1-12S-33E) then drilling.

The case was first set on September 8, 1949 and then continued to December 20, 1949.

#### 1. FIRST HEARING

The case was first heard on December 20, 1949. Texas Pacific appeared to protest the application. At that time Amerada had three completed Devonian wells and one drilling. Texas Pacific had one completed and one drilling. There were

two Devonian dry holes, one of which was the Mid-Continent well.

Evidence was presented by both sides. Amerada filed a brief in support of its application.

On January 23, 1950, the Commission entered its order denying the application of Amerada on the ground that the evidence was insufficient to prove that one well on each 80-acre tract would efficiently drain the recoverable oil from the pool. Exhibit 1 is a copy of this Order R-2.

## 2. REHEARING

Amerada filed its application for rehearing together with another brief. The rehearing was denied February 8, 1950. Exhibit 2 is a copy of Order R-8.

## 3. APPEAL

An appeal was taken by Amerada to the District Court of Lea County, New Mexico. The case was docketed as No. 8485 and service was made. The attorneys for protestant, Texas Pacific Coal and Oil Company, requested that the court hold a pre-trial conference for the purpose of considering the nature and scope of review by the court, including the question of what evidence may be presented.

After the pre-trial conference both parties filed briefs presenting their respective views as to what evidence could be presented on appeal and the jurisdiction of the District Court.

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On December 27, 1950, after the pre-trial conference order, Amerada voluntarily dismissed its appeal with prejudice.

#### 4. TEMPORARY ORDER

In December, 1950, Amerada filed a new application for a temporary order to establish 80-acre proration units for a period of one year. The well location pattern was the same as previously requested.

Since the entry of the original order denying the application, 13 additional producing Devonian wells had been drilled. There had been 18 wells to the Devonian formation drilled at the time of the second application.

The new application was based upon change of conditions and additional information obtained by subsequent development and also the critical shortage of tubular materials necessary for drilling operations.

The application for the temporary order was docketed No. 249. It was set for January 25, 1951, and continued to April 24, 1951.

Texas Pacific Coal and Oil Company concurred in the request for a temporary order provided the allowable was fixed at  $1\frac{1}{2}$  times the normal top unit allowable.

On May 1, 1951, the Commission entered its Order R-69 establishing 80-acre proration units for a period of one year from that date. Exhibit 3 is a copy of Order R-69.

5. EXCEPTION

In December, 1950, Amerada filed an application to force pool two 40-acre tracts comprising an 80-acre unit.

However, one of the 40-acre tracts, belonging to the U. S. Government, was located so that an exception would be required in any event. Consequently on June 15, 1951, Amerada dismissed the pooling application and filed an application for an exception to Order R-69 so as to make NE/4 NE/4 Sec. 3-12S-33E a fractional 40-acre unit. The exception was granted and Caudle #5 was drilled on this tract.

6. MOTION TO SHOW CAUSE

The Commission on its own motion set the case for hearing on October 23, 1951, under No. 315, directing Amerada, Texas Pacific and other interested operators to show cause why temporary 80-acre spacing order R-69 should be continued. Exhibit 4 is a copy of the notice.

The hearing on the Commission's motion has been continued to this date. Technically, that motion is now moot, since Order R-69 expires by its own terms on May 1, 1952.

7. APPLICATION FOR EXTENSION

On March 24, 1952, Amerada filed its application for

an extension of Order R-69 in all of its particulars for an additional period of one year from May 1, 1952. Notice for this application has been properly given.

8. ISSUES INVOLVED IN PRESENT HEARING

The issues are not the same as if the case was being presented to the Commission for the first time. The Commission has already found that the evidence justified a temporary order for one year. If no waste is being committed and conditions have not changed then the order is justified for another year.

Therefore the issues properly now before the Commission are as follows:

- (1) Is any waste now being committed;
- (2) Do the same considerations impelling the granting of the temporary order still apply to justify an extension;
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9. TESTIMONY OF JOHN A. VEEDER, GEOLOGIST

Mr. John A. Veeder is a Geologist for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

- (1) Exhibit 5 is a map of the area covered by Order R-69 which is asked to be extended.
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(3) Exhibits 6-12, both inclusive, are Schlumberger electric logs of the following wells which were drilled by Amerada to the Devonian formation:

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(4) With these exhibits there has now been presented to the Commission Schlumberger logs of all wells which have been drilled to the Devonian in the Bagley pool.

(5) Exhibit 13 is a tabulation showing the completion data on all Amerada wells that have been completed in the Devonian.

(6) Exhibit 14 is a structure map contoured on the top of the Devonian formation.

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(8) Two structure maps have been prepared because there is a cherty limestone impervious cap in the Devonian formation on top of the pay section which must be evaluated in considering the geology of the Bagley-Siluro-Devonian pool.

(9) Considering all of this evidence to date the probable productive limits of the Bagley Devonian pool which should be



covered by the requested spacing order is the area outlined in red on the map marked Exhibit 5. This area covers 2400 acres.

(10) From geological information obtained in the drilling of all wells to date including examination of samples and cores and the study of the Schlumberger logs, it is my opinion that the Bagley Devonian reservoir has very good vugular and fractured type porosity which is connected and continuous throughout the reservoir.

(11) Geological information obtained during the past year's development does not show any change in condition which should prevent an extension of the 80-acre spacing order for another year.

10. TESTIMONY OF R. S. CHRISTIE, PETROLEUM ENGINEER

Mr. R. S. Christie is a Petroleum Engineer for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

(1) The average gas-oil ratio of all wells in the Bagley Devonian pool is 30 cu. ft. for each barrel of oil.

(2) The gravity of the oil is 44° to 46° API.

(3) Exhibit 16 is a graph showing the oil and water production by month, cumulative production, and bottom hole pressure.

(4) Bottom hole pressure and production information indicates that Bagley Devonian is a permeable reservoir under an active water drive with a high and reasonably uniform ca-

capacity to produce, even though there may be considerable variation and irregularity of porosity in the formation penetrated in each well.

(5) Productivity index tests taken in wells drilled in the Bagley-Devonian pool indicate there is good permeability throughout the reservoir.

(6) Under the present rules of the Oil Conservation Commission wells may be drilled 330 feet from the boundary lines of a 40-acre tract. This would authorize the drilling of wells 330 feet from the lines in each corner of a quarter-section and would therefore result in a distance of 1980 feet between wells. Such locations are permitted under the statewide rule of the Oil Conservation Commission and is commonly referred to as 40-acre spacing. Assuming that the statewide 40-acre spacing rule presumes efficient drainage of any reservoir spaced under authority of that rule, the result is that the present rule recognizes that efficient drainage does occur for a distance of over 990 feet from a well, or over an area equivalent to 90 acres. Eighty-acre spacing, as requested by Amerada Petroleum Corporation for the Bagley-Siluro-Devonian pool, is on a uniform spacing pattern which would result in a distance of 1866 feet between wells or the efficient drainage of an area of 80 acres in the form of a square. The 80-acre spacing proposal would require each well to drain from a distance of only 933 feet, which is 57 feet less than is permitted under statewide so-called 40-acre spacing. There are many

pools in New Mexico in which many wells have been drilled in the corner of a 40-acre tract instead of the center. This is authorized under the statewide order commonly referred to as 40-acre spacing. Many of these wells which, as authorized, are presumed to drain an area of 90 acres are producing from reservoirs that are not under an effective water drive and do not have other conditions which are conducive to a large drainage area as exist in the Bagley-Siluro-Devonian pool.

(7) The average cost of Devonian producing wells at Bagley has been approximately \$220,000.

(8) It is my opinion that one well will efficiently and economically drain a minimum area of 80 acres.

(9) It is my opinion that the allowable provided for in the present 80-acre order should be continued for another year.

(10) It is my opinion that development during the past year under the 80-acre order has not caused waste or inequity among any operators or royalty owners.

(11) The steel shortage is as critical as it was a year ago. The average per well tonnage for all wells drilled by Amerada last year was about 75 tons per well. It requires about 175 to 180 tons of steel to complete one well in the Devonian formation at Bagley, or about  $2\frac{1}{2}$  times more than the average.

(12) There has been no change of conditions which would justify a denial of the extension of the 80-acre order for another year.

(13) In view of the production experience it is my opinion that a pressure maintenance program is not necessary or feasible at this time.

11. CONCLUSION

Past experience and present conditions justify an extension of the previous temporary order for another period of one year. No waste is being committed. No injury to the reservoir will result. The correlative rights of all interested parties will be protected. All of the reasons which justified the previous order still exist. The steel shortage is still critical. All operators are in accord. Pressure maintenance operations are not necessary or feasible at this time. We therefore request that Order R-69 be extended for another period of one year from May 1, 1952, under the same terms and conditions.

Respectfully Submitted

SETH & MONTGOMERY

By \_\_\_\_\_

\_\_\_\_\_  
Harry D. Page

\_\_\_\_\_  
Booth Kellough

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PETROLEUM CORPORATION

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- (3) Exhibit 16 is a graph showing the oil and water production by month, cumulative production and bottom hole pressure.
- (4) Bottom hole pressure and production information indicates that Bagley Devonian is a permeable reservoir under an active water drive with a high and reasonably uniform ca-

capacity to produce, even though there may be considerable variation and irregularity of porosity in the formation penetrated in each well.

(5) Productivity index tests taken in wells drilled in the Bagley-Devonian pool indicate there is good permeability throughout the reservoir.

(6) Under the present rules of the Oil Conservation Commission wells may be drilled 330 feet from the boundary lines of a 40-acre tract. This would authorize the drilling of wells 330 feet from the lines in each corner of a quarter-section and would therefore result in a distance of 1980 feet between wells. Such locations are permitted under the statewide rule of the Oil Conservation Commission and is commonly referred to as 40-acre spacing. Assuming that the statewide 40-acre spacing rule presumes efficient drainage of any reservoir spaced under authority of that rule, the result is that the present rule recognizes that efficient drainage does occur for a distance of over 990 feet from a well, or over an area equivalent to 90 acres. Eighty-acre spacing, as requested by Amerada Petroleum Corporation for the Bagley-Siluro-Devonian pool, is on a uniform spacing pattern which would result in a distance of 1866 feet between wells or the efficient drainage of an area of 80 acres in the form of a square. The 80-acre spacing proposal would require each well to drain from a distance of only 933 feet, which is 57 feet less than is permitted under statewide so-called 40-acre spacing. There are many

pools in New Mexico in which many wells have been drilled in the corner of a 40-acre tract instead of the center. This is authorized under the statewide order commonly referred to as 40-acre spacing. Many of these wells which, as authorized, are presumed to drain an area of 90 acres are producing from reservoirs that are not under an effective water drive and do not have other conditions which are conducive to a large drainage area as exist in the Bagley-Siluro-Devonian pool.

(7) The average cost of Devonian producing wells at Bagley has been approximately \$220,000.

(8) It is my opinion that one well will efficiently and economically drain a minimum area of 80 acres.

(9) It is my opinion that the allowable provided for in the present 80-acre order should be continued for another year.

(10) It is my opinion that development during the past year under the 80-acre order has not caused waste or inequity among any operators or royalty owners.

(11) The steel shortage is as critical as it was a year ago. The average per well tonnage for all wells drilled by Amerada last year was about 75 tons per well. It requires about 175 to 180 tons of steel to complete one well in the Devonian formation at Bagley, or about  $2\frac{1}{2}$  times more than the average.

(12) There has been no change of conditions which would justify a denial of the extension of the 80-acre order for another year.

(13) In view of the production experience it is my opinion that a pressure maintenance program is not necessary or feasible at this time.

11. CONCLUSION

Past experience and present conditions justify an extension of the previous temporary order for another period of one year. No waste is being committed. No injury to the reservoir will result. The correlative rights of all interested parties will be protected. All of the reasons which justified the previous order still exist. The steel shortage is still critical. All operators are in accord. Pressure maintenance operations are not necessary or feasible at this time. We therefore request that Order R-69 be extended for another period of one year from May 1, 1952, under the same terms and conditions.

Respectfully Submitted

SETH & MONTGOMERY

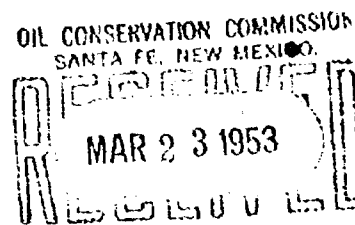
By

Justin T. Reid  
Harry D. Page  
Harry D. Page

Booth Kellough  
Booth Kellough

ATTORNEYS FOR AMERADA  
PETROLEUM CORPORATION

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO



IN THE MATTER OF THE APPLICATION  
OF AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN POOL  
LEA COUNTY, NEW MEXICO

CASE NO. 249

APPLICATION FOR EXTENSION OF ORDER NO. R-69

Comes now Amerada Petroleum Corporation, and alleges and states:

1. That on May 1, 1951, the Oil Conservation Commission entered its Order No. R-69, establishing 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, for a period of one year.
2. On April 29, 1952, the Oil Conservation Commission entered its order No. R-69-A which extended Order No. R-69 for a period of one year.
3. A copy of Order R-69 is attached hereto marked Exhibit A and made a part hereof.
4. That in order to prevent waste, avoid the drilling of unnecessary wells and to conserve critical materials and tubular goods required for drilling operations and to protect the correlative rights of all interested parties, Order No. R-69 should be extended in all its particulars for an additional period of one year from May 1, 1953.

Wherefore, applicant respectfully requests that the Commission set this application for hearing and that due and proper notice be given as required by law and that at the conclusion of said hearing the Commission enter its order continuing Order No. R-69 in all particulars for an additional period of one year from May 1, 1953.

DATED this 20th day of March, 1953.

SETH & MONTGOMERY

By *Chas. S. Montgomery*

Harry D. Page and Richard C. Maxwell

By *Richard C. Maxwell*

Attorneys for Amerada Petroleum Corporation





Exhibit "A"

UNITED STATES DEPARTMENT OF JUSTICE  
FEDERAL BUREAU OF INVESTIGATION  
WASHINGTON, D. C. 20535

This matter came on for hearing at Santa Fe, New Mexico, on  
April 24, 1931, on the petition of American Petroleum Corporation to  
appoint a receiver for the assets of the Santa Fe Oil Company.

1. That the public notice having been given as required by law, the  
Court has heard the parties and the matter is now ready for the Court's decision.

2. That the information now available indicates that one will will  
adversely affect the assets of the Santa Fe Oil Company and that the  
Court should appoint a receiver for the assets of the Santa Fe Oil Company.

3. That the probable production of the Santa Fe Oil Company  
will be sufficient to pay the debts of the Santa Fe Oil Company and  
the assets of the Santa Fe Oil Company.

Section 14, T. 11 S., R. 31 E.  
Section 15, T. 11 S., R. 31 E.  
Section 16, T. 11 S., R. 31 E.  
Section 17, T. 11 S., R. 31 E.

4. That the assets of the Santa Fe Oil Company are hereby established for the  
benefit of the creditors of the Santa Fe Oil Company.

Section 18, T. 11 S., R. 31 E.  
Section 19, T. 11 S., R. 31 E.  
Section 20, T. 11 S., R. 31 E.  
Section 21, T. 11 S., R. 31 E.  
Section 22, T. 11 S., R. 31 E.  
Section 23, T. 11 S., R. 31 E.  
Section 24, T. 11 S., R. 31 E.





BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF THE  
COMMISSION UPON ITS OWN MOTION FOR AN  
ORDER DIRECTING OPERATORS IN THE BAGLEY-  
SILURO-DEVONIAN POOL TO SHOW CAUSE WHY  
THE POOL SHALL NOT BE PLACED ON A FORTY-  
ACRE SPACING PATTERN WITH ALLOWABLE  
ADJUSTMENT

CASE NO. 249

#### Preliminary Statement

This case was continued from the regular hearing of the Commission in April by interlocutory order R-69-B. In December, 1950, Amerada filed an application for a temporary order to establish 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool in Lea County, New Mexico. This application was docketed as Case No. 249 and was heard in April, 1951. On May 1, 1951, the Commission entered its Order R-69 establishing 80-acre proration units for the pool for a period of one year.

On its own motion, the Commission directed Amerada, Texas Pacific Coal and Oil Company and other interested operators to show cause why Order R-69 should be extended. The hearing on this motion was consolidated with Amerada's application for an extension of Order R-69 in April, 1952. On April 29, the Commission entered its Order R-69-A extending Order R-69 for a period of one year and in addition, requiring monthly production reports, ordering certain pressure maintenance tests be made in the pool, and directing the operators to show cause at the regular meeting of the Commission in April, 1953 why the pool should not be placed on a 40-acre spacing pattern with allowable adjustment.

The present hearing is on the Commission's motion directing operators in the field to show cause as provided by Order R-69-A. Notice of this hearing has been properly given.

#### Statement of Amerada's Position

At this hearing it is Amerada's contention that Order R-69-A in all its particulars should be extended for a period of one year from this date.

For cause it would show the following:

1. The Commission has twice found the evidence justified a temporary order for one year.

2. Temporary Orders R-69 and R-69-A have not resulted in waste or prejudiced correlative rights.

3. The same considerations justifying these orders still apply to a further extension of 80-acre spacing in the Bagley-Siluro-Devonian Pool for a period of one year.

4. Developments in the pool since April, 1952, also support an extension of Order R-69-A in all its particulars.

5. Forty acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells.

Testimony in Support of Amerada's Position

To save time and establish a more complete predicate for consideration of the question now before the Commission, it is requested that the records of previous hearings in this case be incorporated by reference and made a part of this record.

The first witness in support of Amerada's position is Mr. John A. Veeder. Mr. Veeder is a Geologist for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

1. The probable productive area of the Devonian at Bagley is the same as the area covered by Order R-69-A.

2. The Devonian in this area shows an anticlinal structure topped by a cap of impervious, cherty limestone.

3. There is no evidence of any structural irregularities in the area which would prevent the movement of oil through the pay.

4. The Bagley Devonian reservoir has very good vugular and fractured type porosity which is connected and continuous throughout the reservoir.

5. Nothing in the structure or lithology of the Devonian of Bagley would



indicate a need for smaller spacing units and have been set by Order R-69-A.

6. No additional geological information has been developed since April, 1952 which should prevent an extension of Order R-69-A.

The next witness in support of Amerada's position is Mr. R. S. Christie. Mr. R. S. Christie is a Petroleum Engineer for Amerada Petroleum Corporation and is qualified to testify as an expert witness. The substance of his testimony is as follows:

1. One well in the Devonian at Bagley will efficiently drain at least 80 acres.
2. One well in the Devonian at Bagley will economically drain 80 acres.
3. An extension of Order R-69-A will not cause waste and will tend to reduce the risk of creating waste.
4. An extension of Order R-69-A will not prejudice correlative right in the field.
5. A 40-acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells.
6. An extension of Order R-69-A will tend to promote efficient use of critical materials.
7. Studies of the field including its production history during the past year fully support an extension of Order R-69-A in all its particulars.

#### Conclusion

The question before the Commission is not a matter of first impression. R-69-A is a workable order. It has the great merit of having worked for the last two years. Operations in the pool to date fully confirm predictions made at previous hearings in this case by Amerada's witnesses with respect to pressure maintenance, efficient and economic drainage area, and reservoir behavior. We

believe Order R-69-A has worked fairly and efficiently from the standpoint of all concerned.

The order has not resulted in waste. It has promoted the uniform development of the field and the conservation of critical materials.

There is no evidence of any change in conditions since April, 1952 which necessitates discontinuance or modification of Order R-69 nor is there any evidence which should prevent extension of Order R-69 for another year.

Conversely, 40-acre spacing of the Devonian at Bagley would result in the drilling of unnecessary wells and would waste money and materials.



LIST OF EXHIBITS

1. Commission's Order R-69.
2. Commission's Order R-69-A.
3. Notice of Commission with respect to this hearing.
4. Commission's Interlocutory Order R-69-B.
5. Area map of the probable productive limits of the Devonian at Bagley with the locations of all wells drilled in the field.
6. Schlumberger, Amerada's BFN No. 1.
7. Completion Data Sheet on all Bagley Devonian wells.
8. Structure map contoured on top of the Devonian.
9. Structure map contoured on top of the Devonian Pay.
10. A graph showing cumulative and monthly production of oil and water and the bottom hole pressure history of the Devonian Reservoir at Bagley.

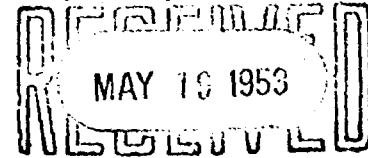


EXHIBIT 1

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE No. 249  
ORDER No. R-69

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR AN  
ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA COUNTY,  
NEW MEXICO

ORDER OF THE COMMISSION

BY THE COMMISSION

This matter came on for hearing at Santa Fe, New Mexico, on April 24, 1951, on the application of Amerada Petroleum Corporation to establish proration units and uniform spacing of wells for the Bagley Siluro-Devonian pool, in Lea County, New Mexico.

The Commission having heard the evidence presented and being fully advised,

FINDS:

1. That due public notice having been given as required by law, the Commission has jurisdiction of the subject matter and of the parties.
2. That the information now available indicates that one well will effectively drain an area of 80 acres and considering the shortage of casing and other tubular materials the Bagley Siluro-Devonian pool should be developed on 80-acre proration units for a period of one year.
3. That the probable productive limits of the Bagley Siluro-Devonian pool ascertainable from the information available at the time of the hearing in this case comprise the following land in Lea County, New Mexico.

All of section 34, T. 11 S, R. 33 E  
NW/4 and S/2 section 35, T.11 S, R.33 E  
N/2 and SE/4 section 3, T.12 S, R.33 E  
All of section 2, T.12 S, R.33 E  
E/2 NW/4 and N/2 NE/4 section 11, T.12 S, R.33 E

IT IS THEREFORE ORDERED:

1. That 80-acre proration units are hereby established for the Bagley Siluro-Devonian pool as delineated above, which shall comprise the west half and east half of each Governmental quarter section, except the following units, to-wit:

N/2 NW/4 section 35, T.11 S, R.33 E  
S/2 NW/4 section 35, T.11 S, R.33 E  
N/2 NW/4 section 3, T.12 S, R.33 E  
S/2 NW/4 section 3, T.12 S, R.33 E

EXHIBIT B

Amerada

N/2 NE/4 section 2, T.12 S, R.33 E  
SW/4 NE/4 and NW/4 SE/4 section 2, T.12 S, R.33E  
SE/4 NE/4 and NE/4 SE/4 section 2, T.12 S, R.33 E  
S/2 SE/4 section 2, T.12 S, R.33 E  
N/2 NE/4 section 11, T.12 S, R.33 E

2. All wells drilled into the Bagley Siluro-Devonian pool shall be located in the center of the northwest and the southeast quarters of each governmental quarter section, with a tolerance of 150 feet in any direction to avoid surface obstructions.

3. That no well shall be drilled or produced in said pool except in conformity with the spacing pattern set forth above without special order of the Commission after notice and hearing.

4. That all wells producing or hereafter completed in the Bagley Siluro-Devonian pool are hereby given an allowable equivalent to one and one-half times the top allowable for a 40-acre proration unit with the deep pool adaptation, as provided for in the rules and regulations of the Commission.

5. If any well is drilled as an exception to the well spacing pattern set forth above under special order of the Commission, the allowable for such well shall be the top allowable for a 40-acre proration unit with the deep pool adaptation, as provided by the rules and regulations of the Commission.

6. This order shall cover all of the Bagley Siluro-Devonian common source of supply and any extension thereof as may be determined by further development, and shall continue in force for a period of one year from the first day of May, 1951.

Done this 1st day of May 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

/S/ Guy Shepard  
GUY SHEPARD, Member

/S/ R. R. Spurrier  
R. R. SPURRIER, Secretary

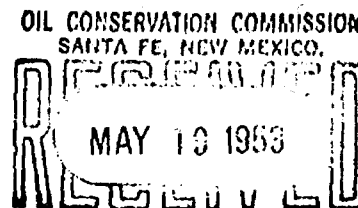


EXHIBIT 2

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:

CASES 249 AND 315  
(Consolidated)  
ORDER No. R-69-A

THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR  
AN ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at Santa Fe, New Mexico, on April 24, 1951 and again on April 15, 1952, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 29th day of April 1952, the Commission, a quorum being present, having considered the testimony adduced and the exhibits received at said hearings, and being fully advised in the premises,

FINDS:

- (1) That due public notice has been given as required by law, and the Commission has jurisdiction of this cause and all the matters and things relating thereto.
- (2) That heretofore, the Commission, by virtue of Order No. R-69, to which reference is hereby made, established 80-acre proration units, establishing a spacing pattern, provided for an allowable equal to one and one-half times the top allowable for a 40-acre proration unit (with deep-pool adaptation), and provided for an exception to the 80-acre drilling pattern with adjustment of allowables.
- (3) That Order No. 69, effective May 1, 1951, was a temporary Order, established for a period of one year.
- (4) That geological and engineering data now available to the Commission indicates that one well apparently will drain 80 acres, and the Bagley-Siluro-Devonian pool should be developed on 80-acre proration units for a further period of one year.
- (5) That information presented to the Commission indicates that the adoption of secondary-recovery methods at present is not necessary.
- (6) That the operators in the Bagley-Siluro-Devonian pool should present to the Commission a monthly report showing complete production and reservoir information.

EXHIBIT

A

Amerada

-2-

Cases 249 and 315 (Consolidated)  
Order No. R-69-A

(7) That Order No R-69 should be extended for a period of one year upon the conditions and limitations herein set forth.

IT IS THEREFORE ORDERED:

(1) That Order No. R-69, be, and it hereby is extended for a period of one year from the first day of May 1952, upon the following terms and conditions, to-wit:

(a) That each operator in the Bagley-Siluro-Devonian pool shall file with the Commission office at Santa Fe, New Mexico, on or before the 15th day of each and every month, a monthly tabulated report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production. This requirement is in addition to and supplementary to the other reports and surveys presently required by the Commission, and is not in substitution or in lieu thereof.

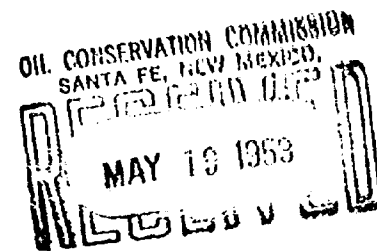
(b) That said operators shall cause a pool-wide bottom-hole pressure survey to be taken during the months of July 1952, November 1952, and March 1953, and the results thereof reflecting such pressures of each well shall be submitted in writing to the Commission on or before the fifth day of the following month. (Bottom-hole pressure tests shall be taken as prescribed by Rule 302 of the Commission's Rules and Regulations.)

(c) At the regular Commission hearing for the month of April in 1953, the operators shall show cause why said pool shall not be placed on a 40-acre spacing pattern with allowable adjustment.

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

OIL CONSERVATION COMMISSION - Signed by: Edwin L. Mechem, Chairman;  
Guy Shepard, Member; R. R. Spurrier, Secretary

EXHIBIT 3



NOTICE OF PUBLICATION, STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION, SANTA FE, NEW  
MEXICO

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the rules and regulations of said Commission promulgated thereunder of the following public hearing to be held at 9 o'clock a.m. on April 16, 1953, at Mabry Hall, State Capitol, in the City of Santa Fe, New Mexico

STATE OF NEW MEXICO TO: All named parties and persons having any right, title, interest or claim in the following cases, and notice to the public.

CASE 249: (Readvertisement)

In the matter of the application of the Oil Conservation Commission upon its own motion for an order directed to the operators in the Bagley-Siluro-Devonian Pool to show cause why said pool shall not be placed on a 40-acre spacing pattern with allowable adjustment, to conform with provisions of Commission Order No. R-69-A

CASE 522:  
etc.

\* \* \* \* \*

GIVEN under the seal of the New Mexico Oil Conservation Commission this 26th day of March, 1953.

(SEAL)

STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

R. R. SPURRIER,  
Secretary

COPY

COPY

EXHIBIT C

*Amrad*

RECEIVED  
MAY 10 1953

EXHIBIT NO. 4

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN RE: CASES 294 AND 315  
(CONSOLIDATED) - TEMPORARY  
80-ACRE SPACING IN THE BAGLEY-  
SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO.

ORDER NO. R-69-B

INTERLOCUTORY ORDER

WHEREAS on the 29th day of April, 1952, the Oil Conservation Commission of New Mexico issued Order R-69-A as a temporary order for a period of one year from and after May 1, 1952, and

WHEREAS said order will expire by its own terms unless extended,  
and

WHEREAS due notice to show cause why the Bagley-Siluro-Devonian Pool in Lea County, New Mexico, should not be placed on 40-acre spacing with allowable adjustment following expiration of Order R-69-A, was given all interested parties, returnable April 17, 1953, and each and all of the parties duly appeared on said date, and moved the Commission for continuance, and

Good cause therefor appearing,

IT IS THEREFORE ORDERED:

First, That said cause be, and the same hereby is continued to the next regularly advertised hearing of this Commission;

Second, That all the rights, obligations and duties included in and imposed by Order R-69-A dated April 29, 1952, be, and the same hereby are extended, and remain in full force and effect until the regular May 1953 hearing of the Commission, and the regular issuance thereafter of the Commission order in the premises, but in no event beyond June 1, 1953.

DONE at Santa Fe, New Mexico, this 20th day of April, 1953.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

Edwin L. Mechem, Chairman

E. S. Walker, Member

R. R. Spurrier, Secretary

S E A L

EXHIBIT

D

Amesada

New Mexico  
OIL CONSERVATION COMMISSION

GOVERNOR EDWIN L. MECHEY  
CHAIRMAN  
LAND COMMISSIONER E.S. WALKER  
MEMBER  
STATE GEOLOGIST R.R. SPURRIER  
SECRETARY AND DIRECTOR



P. O. BOX 871  
SANTA FE, NEW MEXICO

Case 249:

Seth — Exhibits A-B-C-D (to consolidate record)

A — 69-77

B — 69-

C — Notice

D — 69-B

Woodward — (Presents Asnerada's Written statement)

+ Exhibit E — (Aerial map of Bagley field)

w/veeder

"

F (Sollumberger Amer. #1 St. BTN)

"

G (Prod. Data Prod sheets of  
Devonian production in Bagley field)

"

H (1-Struct. map — (Contours) of Bagley)

"

I (2-Struct map Bagley field on  
top of Devonian)

w/christie

J — (Graph — monthly oil Prod & Consum.  
Water prod. BHP, etc in field)

K



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

April 30, 1952

C  
O  
P  
Y  
  
Mr. Booth Kellough  
Amerada Petroleum Corporation  
Tulsa, Oklahoma

Dear Mr. Kellough:

We are sending you herewith signed copies (2) of Order  
R-69-A issued by the Oil Conservation Commission on April  
29, 1952, in Case 249 (as consolidated with Case 315).

Very truly yours,

R. R. Spurrier  
Secretary - Director

RRS:nr

Encl.

VIA AIR MAIL

F

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:

CASES 249 AND 315  
(Consolidated)  
ORDER No. R-69-A

THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN POOL,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at Santa Fe, New Mexico, on April 24, 1951 and again on April 15, 1952, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 29<sup>th</sup> day of April 1952, the Commission, a quorum being present, having considered the testimony adduced and the exhibits received at said hearings, and being fully advised in the premises,

FINDS:

(1) That due public notice has been given as required by law, and the Commission has jurisdiction of this cause and all the matters and things relating thereto.

(2) That heretofore, the Commission, by virtue of Order No. R-69, to which reference is hereby made, established 80-acre proration units, establishing a spacing pattern, provided for an allowable equal to one and one-half times the top allowable for a 40-acre proration unit (with deep-pool adaptation), and provided for an exception to the 80-acre drilling pattern with adjustment of allowables.

(3) That Order No. 69, effective May 1, 1951, was a Temporary Order, established for a period of one year.

(4) That geological and engineering data now available to the Commission indicates that one well apparently will drain 80 acres, and the Bagley-Siluro-Devonian pool should be developed on 80-acre proration units for a further period of one year.

(5) That information presented to the Commission indicates that the adoption of secondary-recovery methods at present is not necessary.

(6) That the operators in the Bagley-Siluro-Devonian pool should present to the Commission a monthly report showing complete production and reservoir information.

(7) That Order No. R-69 should be extended for a period of one year upon the conditions and limitations herein set forth.

IT IS THEREFORE ORDERED:

(1) That Order No. R-69, be, and it hereby is extended for a period of one year from the first day of May 1952, upon the following terms and conditions, to-wit:

(a) That each operator in the Bagley-Siluro-Devonian pool shall file with the Commission office at Santa Fe, New Mexico, on or before the 15th day of each and every month, a monthly tabulated report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production. This requirement is in addition to and supplementary to the other reports and surveys presently required by the Commission, and is not in substitution or in lieu thereof.

*Substitution*

(b) That said operators shall cause a pool-wide bottom-hole pressure survey to be taken during the months of July 1952, November 1952, and March 1953, and the results thereof reflecting such pressures of each well shall be submitted in writing to the Commission on or before the fifth day of the following month. (Bottom-hole pressure tests shall be taken as prescribed by Rule 302 of the Commission's Rules and Regulations.)

(c) At the regular Commission hearing for the month of April in 1953, the operators shall show cause why said pool shall not be placed on a 40-acre spacing pattern with allowable adjustment.

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

GUY SHEPARD, Member

R. R. SPURRIER, Secretary

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

July 31, 1952

C  
O  
P  
Y

Mr. Jack Campbell  
Atwood, Malone and Campbell  
Roswell, New Mexico

Dear Jack:

In Order No. R-69-A concerning the Amerada 80-acre spacing case in Bagley-Siluro-Devonian, the Commission requested all operators in the pool to submit a monthly report of operations.

To date, Texas & Pacific Coal and Oil Co. has not submitted any of the required monthly reports. Inasmuch as you have represented them at previous Commission hearings, I deemed it advisable to contact you so that you could advise T.P. that the requested information has not been received.

I am enclosing a copy of the order issued in the case for your information.

Sincerely,

W. B. Macey  
Chief Engineer

WBM:nr

File Case 249

BAGLEY-SILURO/DEVONIAN  
PRESSURE PRODUCTION HISTORY  
Datum - 6700

| <u>Survey Period</u> | <u>No.<br/>Wells<br/>Surveyed</u> | <u>Arithmetic<br/>Average<br/>BHP</u> | <u>Current Rate</u> |                                       |                                         | <u>Cumulative Rate</u> |                                  |                                         |
|----------------------|-----------------------------------|---------------------------------------|---------------------|---------------------------------------|-----------------------------------------|------------------------|----------------------------------|-----------------------------------------|
|                      |                                   |                                       | <u>BHP<br/>Drop</u> | <u>Oil<br/>Production<br/>Barrels</u> | <u>Psi Drop<br/>Million<br/>Barrels</u> | <u>BHP<br/>Drop</u>    | <u>Oil<br/>Production (Bbls)</u> | <u>Psi Drop<br/>Million<br/>Barrels</u> |
| Original             |                                   | 4285                                  |                     |                                       |                                         |                        |                                  |                                         |
| November, 1949       | 2                                 | 4274                                  | 11                  | 21,303                                | 516                                     | 11                     | 21,303                           | 516                                     |
| April, 1950          | 7                                 | 4253                                  | 21                  | 184,969                               | 113.5                                   | 32                     | 206,272                          | 155                                     |
| October, 1950        | 9                                 | 4252                                  | 1                   | 208,747                               | 4.8                                     | 33                     | 415,019                          | 79.5                                    |
| April, 1951          | 12                                | 4259                                  | -7                  | 414,978                               | -                                       | 26                     | 829,997                          | 31.3                                    |
| October, 1951        | 15                                | 4167                                  | 92                  | 935,309                               | 98.36                                   | 118                    | 1,765,306                        | 66.8                                    |
| April, 1952          | 16                                | 4199                                  | -32                 | 816,827                               | -                                       | 86                     | 2,582,133                        | 33.3                                    |

Case 249  
3/5  
4-15-52

275  
Tatum, New Mexico  
July 14, 1952

Oil Conservation Commission  
State of New Mexico  
Santa Fe, New Mexico

Gentlemen:

In compliance with your order No. R 69-A, dated April 29, 1952, concerning the Bagley Siluro-Devonian Pool, Lea County, New Mexico, we are submitting the attached tabulation of production data for the month of June 1952.

Contained in the tabulation is the monthly report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production and cumulative gas production.

Very truly yours,

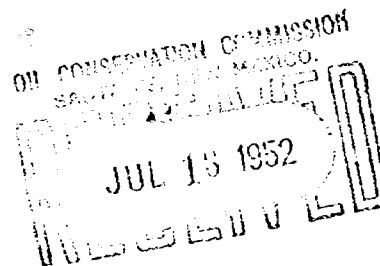
AMERADA PETROLEUM CORP.

*K. V. Stephenson*  
K. V. Stephenson  
Foreman

KVS/jro

Enc.

cc: Mr. R. S. Christie  
Mr. J. C. Blackwood  
Monument Office  
File



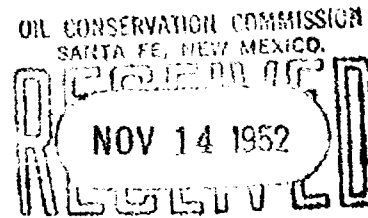
## BAGLEY SILURO-DEVONIAN POOL

## PRODUCTION DATA

June 1952

| LEASE          | ALLOW-<br>ABLE<br>BBLs. | ACTUAL<br>OIL<br>BBLs. | OIL<br>RUN<br>BBL. | WATER<br>BBL. | GAS<br>CU. FT. | CUMULATIVE<br>OIL<br>BBL. | CUMULATIVE<br>WATER<br>BBL. | CUMULATIVE<br>GAS<br>CU. FT. |
|----------------|-------------------------|------------------------|--------------------|---------------|----------------|---------------------------|-----------------------------|------------------------------|
| <u>AMERADA</u> |                         |                        |                    |               |                |                           |                             |                              |
| State BTA #1   | 10,140                  | 9,714                  | 10,504             | -             | 310,848        | 286,090                   | -                           | 9,154,880                    |
| State BTC #1   | 10,140                  | 10,076                 | 10,518             | -             | 322,432        | 266,857                   | -                           | 8,539,424                    |
| State BTC #3   | 10,140                  | 10,076                 | 10,518             | -             | 322,432        | 151,039                   | -                           | 4,833,248                    |
| State BTD #1   | 10,140                  | 10,673                 | 10,452             | -             | 341,536        | 246,007                   | 110,195                     | 7,872,224                    |
| State BTD #2   | 10,140                  | 8,819                  | 8,979              | -             | 282,208        | 169,835                   | 25,018                      | 5,434,720                    |
| State BTD #3   | 10,140                  | 8,819                  | 8,979              | -             | 282,208        | 155,320                   | 16,744                      | 4,970,240                    |
| State BTI #1   | 10,020                  | 9,448                  | 9,909              | -             | 302,336        | 181,926                   | -                           | 5,821,632                    |
| State BTL #1   | 10,140                  | 10,036                 | 10,040             | -             | 321,152        | 103,417                   | -                           | 3,309,344                    |
| State BTM #1   | 1,112                   | 599                    | 1,419              | 5,391         | 19,168         | 5,267                     | 47,817                      | 168,544                      |
| State BTN #1   | 9,126                   | 3,541                  | 2,843              | -             | 113,312        | 3,541                     | -                           | 113,312                      |
| Caudle #2      | 5,130                   | 3,815                  | 4,279              | 5,723         | 122,080        | 117,479                   | 46,560                      | 3,759,328                    |
| Caudle #5      | 6,570                   | 6,485                  | 6,700              | -             | 207,520        | 39,379                    | -                           | 1,260,128                    |
| Chambers #1    | 2,100                   | 974                    | 938                | 2,273         | 31,168         | 40,387                    | 37,130                      | 1,292,384                    |
| Mathers #1     | 8,400                   | 5,023                  | 5,774              | 321           | 160,736        | 132,155                   | 3,551                       | 4,228,960                    |
| Mathers "A" #1 | 10,140                  | 9,635                  | 10,128             | -             | 308,320        | 84,039                    | -                           | 2,689,248                    |
| Mathers "A" #2 | 10,140                  | 9,635                  | 10,128             | 1,071         | 308,320        | 43,384                    | 2,445                       | 1,388,288                    |
| TOTALS         | 133,718                 | 117,368                | 122,108            | 14,779        | 3,755,776      | 2,026,122                 | 289,460                     | 64,835,904                   |

*Put in Case file*



Tatum, New Mexico  
November 7, 1952

Oil Conservation Commission  
Santa Fe, New Mexico

Gentlemen:

In compliance with your order No. R 69-A, dated April 29, 1952, concerning the Bagley Siluro-Devonian Pool, Lea County, New Mexico, We are submitting the attached tabulation of production data for the month of October 1952.

Contained in the tabulation is the monthly report for each well showing the allowable, the actual oil production, the oil runs, water production, gas production, cumulative oil production, cumulative water production, and cumulative gas production.

Very truly yours,

AMERADA PETROLEUM CORPORATION

A handwritten signature in dark ink, appearing to read "K. V. Stephenson".

K. V. Stephenson  
Foreman

KVS/rha

CC: Oil Conservation Commission, Hobbs  
Mr. W. B. Macey  
Mr. R. S. Christie  
Mr. J. C. Blackwood  
Mr. W. A. Abbott  
File



# BAGLEY SILURO-DEVONIAN POOL

## PRODUCTION DATA

November 1952

| LEASE          | ALLOW-<br>ABLE<br>BBLs. | ACTUAL<br>OIL<br>BBLs. | OIL<br>RUN<br>BBLs. | WATER<br>BBLs. | GAS<br>CU. FT. | CUMULATIVE<br>OIL<br>BBLs. | CUMULATIVE<br>WATER<br>BBLs. | CUMULATIVE<br>GAS<br>CU. FT. |
|----------------|-------------------------|------------------------|---------------------|----------------|----------------|----------------------------|------------------------------|------------------------------|
| State BTA #1   | 9,827                   | 9,831                  | 9,659               | -              | 314,592        | 324,138                    | -                            | 10,372,544                   |
| State BTC #1   | 9,827                   | 9,832                  | 9,671               | -              | 314,624        | 304,731                    | -                            | 9,751,392                    |
| State BTC #3   | 9,827                   | 9,832                  | 9,670               | -              | 314,624        | 188,912                    | -                            | 6,045,184                    |
| State BTD #1   | 9,827                   | 9,830                  | 9,533               | -              | 314,560        | 283,936                    | 110,195                      | 9,085,952                    |
| State BTD #2   | 9,827                   | 9,023                  | 9,021               | 679            | 288,736        | 204,808                    | 26,267                       | 6,553,856                    |
| State BTD #3   | 9,827                   | 9,023                  | 9,022               | -              | 288,736        | 190,293                    | 16,744                       | 6,089,376                    |
| State BTI #1   | 9,610                   | 9,616                  | 9,623               | -              | 307,712        | 219,258                    | -                            | 7,016,256                    |
| State BTL #1   | 9,827                   | 9,831                  | 9,628               | -              | 314,592        | 141,278                    | -                            | 4,520,896                    |
| State BTM #1   | 1,395                   | 856                    | 949                 | 7,704          | 27,392         | 9,671                      | 82,292                       | 309,472                      |
| State BTN #1   | 9,827                   | 9,835                  | 9,640               | -              | 314,720        | 39,015                     | -                            | 1,248,480                    |
| Caudle #2      | 5,939                   | 4,893                  | 4,755               | 7,340          | 156,576        | 132,567                    | 74,983                       | 4,242,144                    |
| Caudle #5      | 6,386                   | 6,394                  | 6,243               | 556            | 204,608        | 63,558                     | 882                          | 2,033,856                    |
| Chambers #1    | 3,100                   | 1,862                  | 1,871               | 7,005          | 59,584         | 46,224                     | 52,870                       | 1,479,168                    |
| Mathers #1     | 9,827                   | 9,832                  | 9,899               | 972            | 314,624        | 167,089                    | 7,005                        | 5,346,848                    |
| Mathers #A" #1 | 9,827                   | 9,307                  | 9,233               | 1,034          | 297,824        | 119,345                    | 2,539                        | 3,819,040                    |
| Mathers "A" #2 | 9,827                   | 9,307                  | 9,232               | 8,253          | 297,824        | 78,688                     | 21,681                       | 2,518,016                    |
| TOTALS         | 134,527                 | 129,104                | 127,649             | 33,543         | 4,131,328      | 2,513,515                  | 395,428                      | 80,432,480                   |

Case 241

October 3, 1952

Heidel and Swarthout  
115 North First Street  
Lovington, New Mexico

Attention: Mr. A. M. Swarthout

Dear Mr. Swarthout:

In reply to your letter of September 26, 1952  
you will find enclosed Commission Order #R-69-A.

This Order will explain in full the status of  
the spacing in the Bagley-Siluro-Devonian Pool.

Very truly yours,

R. R. Spurrier  
Secretary - Director

RRS:lh  
enc. 1

R-69-A

Wom

LAW OFFICES OF  
**HEIDEL & SWARTHOUT**

115 NORTH FIRST STREET  
LOVINGTON, NEW MEXICO

F. L. HEIDEL  
A. M. SWARTHOUT  
H. D. ROSEBROUGH, JR.

September 26, 1952

Oil Conservation Commission  
State of New Mexico  
Santa Fe, New Mexico

Gentlemen:

We would appreciate your advising us as to the present status of the spacing in the Bagley-Siluro-Devonian pool.

At the time that the order was entered in case No. 249 in 1951, it was our understanding that said order was a temporary one, expiring at the end of one year unless extended by the Commission. I also noted some months ago a notice of hearing concerning a change in the spacing of said pool from 80 to 40 acres on the Commission's own motion.

We desire this information on behalf of Mr. W. E. Mathers of Caprock, New Mexico, a mineral owner in said pool.

Very truly yours,

*A. M. Swarthout*

of HEIDEL & SWARTHOUT

AMS:gk

*and order 69-A*

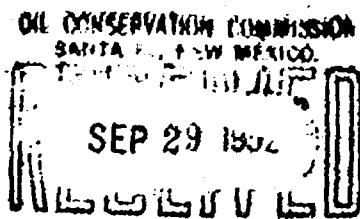


EXHIBIT NO. 1

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE NO. 191  
ORDER NO. R-2

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR THE  
ESTABLISHMENT OF PRORATION UNITS AND  
UNIFORM SPACING OF WELLS IN THE BAGLEY-  
SILURO-DEVONIAN POOL IN LEA COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This matter came on for hearing before the Commission on December 20, 1949 on the application of Amerada Petroleum Corporation to establish proration units and uniform spacing of wells in the Bagley-Siluro/Devonian Pool in Lea County, New Mexico.

The Commission having heard the evidence, the argument of counsel and being duly advised,

FINDS:

1. The Commission has jurisdiction of the subject matter and of the interested parties, due notice of the hearing having been given.
2. The evidence is insufficient to prove that the proposed plan of spacing would avoid the drilling of unnecessary wells, secure the greatest ultimate recovery from the pool or protect correlative rights.
3. The evidence is insufficient to prove that one well drilled on each 80-acre tract would efficiently drain the recoverable oil from the pool.

IT IS THEREFORE ORDERED:

1. The application of Amerada Petroleum Corporation is denied.
2. Nothing contained herein shall be construed to require the drilling of one well on each 40-acre tract in the pool.
3. Nothing contained herein shall be construed to be a determination by the Commission as to what constitutes "reasonable development" of any lease in the pool in relation to the implied covenants of any such lease.

DONE at Santa Fe, New Mexico, on the 23rd day of January, 1950.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
s/THOMAS J. MABRY, CHAIRMAN  
s/ GUY SHEPARD, MEMBER  
s/ R. R. SPURRIER, SECRETARY

249  
 315  
 4-15-52  
 No. 1

TEXAS PACIFIC COAL AND OIL COMPANY  
 BAGLEY-SILURO/DEVONIAN  
 PRODUCTIVITY INDEXES

| <u>Lease</u> | <u>Well<br/>No.</u> | <u>Oil<br/>Bbls. Hr.</u> | <u>Oil<br/>Bbls. 24 Hrs</u> | <u>SIBHP<br/>Psi</u> | <u>FBHP<br/>Psi</u> | <u>PI</u> |
|--------------|---------------------|--------------------------|-----------------------------|----------------------|---------------------|-----------|
| State "B"    | 1                   | 13.80                    | 331.2                       | 4272                 | 4252                | 16.56     |
| State "C"    | 1                   | 64.83                    | 1556.6                      | 4269                 | 4231                | 40.96     |
| State "C"    | 2                   | 66.50                    | 1596.0                      | 4215                 | 4154                | 26.2      |
| State "C"    | 3                   | 42.80                    | 1026.7                      | 4212                 | 4055                | 6.54      |

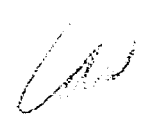


EXHIBIT NO. 3

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE NO. 249

ORDER NO. R-69

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR AN  
ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO

ORDER OF THE COMMISSION

This matter came on for hearing at Santa Fe, New Mexico, on April 24, 1951, on the application of Amerada Petroleum Corporation to establish proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, in Lea County, New Mexico.

The Commission having heard the evidence presented and being fully advised,

**FINDS:**

1. That due public notice having been given as required by law, the Commission has jurisdiction of the subject matter and of the parties.
2. That all of the allegations contained in the application filed herein by Amerada Petroleum Corporation are true and correct.
3. That the probable productive limits of the Bagley-Siluro-Devonian Pool ascertainable from the information available at the time of the hearing in this case comprise the following land in Lea County, New Mexico:

All of Sec. 34 - T 11 S - R 33 E  
NW and S/2, Sec. 35 - T 11 S - R 33 E  
N/2 and SE, Sec. 3 - T 12 S - R 33 E  
All of Sec. 2 - T 12 S - R 33 E  
E/2 NW and N/2 NE, Sec. 11 - T 12 S - R 33 E

**IT IS THEREFORE ORDERED:**

1. That 80 acre proration units are hereby established for the Bagley-Siluro-Devonian Pool as delineated above, which shall comprise the West half and East half of each Governmental quarter section, except the following units, to-wit:

N/2 NW, Sec. 35 - T 11 S - R 33 E  
 S/2 NW, Sec. 35 - T 11 S - R 33 E  
 N/2 NW, Sec. 3 - T 12 S - R 33 E  
 S/2 NW, Sec. 3 - T 12 S - R 33 E  
 N/2 NE, Sec. 2 - T 12 S - R 33 E  
 SW NE and NW SE, Sec. 2 - T 12 S - R 33 E  
 SE NE and NE SE, Sec. 2 - T 12 S - R 33 E  
 S/2 SE, Sec. 2 - T 12 S - R 33 E  
 N/2 NE, Sec. 11 - T 12 S - R 33 E

2. All wells drilled into the Bagley-Siluro-Devonian Pool shall be located in the center of the Northwest and the Southeast quarters of each governmental quarter section, with a tolerance of 150 feet in any direction to avoid surface obstructions.

3. That no well shall be drilled or produced in said Pool except in conformity with the spacing pattern set forth above without special order of the Commission after notice and hearing.

4. That all wells producing or hereafter completed in the Bagley-Siluro-Devonian Pool are hereby given an allowable equivalent to one and one-half times the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided for in the rules and regulations of the Commission.

5. If any well is drilled as an exception to the well spacing pattern set forth above under special order of the Commission, the allowable for such well shall be the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided by the rules and regulations of the Commission.

6. This order shall cover all of the Bagley-Siluro-Devonian common source of supply and any extension thereof as may be determined by further development, and shall continue in force for a period of one year from the first day of May, 1951.

Done this 1st day of May, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

Edwin L. Mechem, Chairman

/s/ Guy Shepard  
Guy Shepard, Member

/s/ R. R. Spurrier  
R. R. Spurrier, Secretary

EXHIBIT NO. 2      4-15-50 21

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE NO. 191  
ORDER NO. R-8

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR THE  
ESTABLISHMENT OF PRORATION UNITS AND  
UNIFORM SPACING OF WELLS IN THE BAGLEY-  
SILURO/DEVONIAN POOL IN LEA COUNTY,  
NEW MEXICO.

ORDER DENYING REHEARING

BY THE COMMISSION:

Amerada Petroleum Corporation having filed herein an application for rehearing on the alleged grounds that Order No. R-2 heretofore entered on 23 January 1950 was erroneous, and the Commission having considered said motion and having concluded that it is not well taken,

IT IS THEREFORE ORDERED that the application for rehearing filed by Amerada Petroleum Corporation will be denied.

DONE this 8th day of February, 1950, at Santa Fe,  
New Mexico.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

/s/ THOMAS J. MABRY, CHAIRMAN

/s/ GUY SHEPARD, MEMBER

/s/ R. R. SPURRIER, SECRETARY



EXHIBIT NO. 4

In the matter of the application of the Oil Conservation Commission upon its own motion for an order directed to Amerada Petroleum Corporation, and Texas and Pacific Coal and Oil Company, and all other operators and persons having an interest in the subject matter hereof directing that pressure maintenance or other secondary recovery projects be instituted in the Bagley (Siluro-Devonian) Pool in Lea County, New Mexico, within six months from October 23, 1951, or that 80-acre spacing as provided for in Commission Order No. R-69 be rescinded, and 40-acre spacing be instituted for the prevention of waste and the protection of correlative rights, and directing Amerada Petroleum Corporation, Texas and Pacific Coal and Oil Company and all other operators or persons interested to show cause at Santa Fe, New Mexico, on October 23, 1951, why such order should not be entered.

4-10-52

GULF OIL CORPORATION  
CASE 315, BAGLEY-SILURO-DEVONIAN POOL  
LEA COUNTY, NEW MEXICO  
HEARING APRIL 15, 1952

Case 249  
(315)

As Gulf Oil Corporation has acreage within the productive limits of the pool, we are vitally interested in this case. While we do not have available detailed information regarding the Bagley-Siluro-Devonian reservoir, we have examined the reservoir pressure performance and find that the natural sources of reservoir energy are maintaining the pressure very close to that originally existing. We, therefore, find no justification at this time for the institution of pressure maintenance or secondary recovery operations in the field.

Gulf does not now have information available which would conclusively show whether one well is capable of draining 80 acres in this reservoir. However, there is no indication to the contrary at this time, and it is respectfully recommended that the Commission grant an extension to the present order until there is sufficient evidence to determine whether or not the reservoir is being adequately drained by 80 acres.

GENERAL OFFICES  
120 BROADWAY NEW YORK

AMERADA PETROLEUM CORPORATION  
BEACON BUILDING  
P. O. BOX 2040  
TULSA 2, OKLA.

March 24, 1952

Oil Conservation Commission  
State of New Mexico  
Santa Fe, New Mexico

Attention: Mr. Macy

Gentlemen:

Enclosed are the following:

1. Application in triplicate for one-year extension of the Bagley spacing order in Case No. 249;
2. Application in triplicate for exception to Rule 506 (b) 2, in Case No. 341.

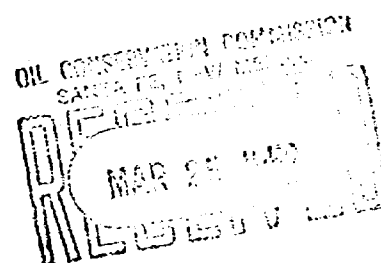
We will thank you if you will file these instruments so that they may be set for the regular April 15, 1952 hearing.

With best regards, I am,

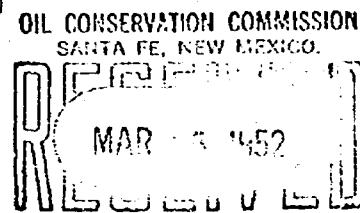
Very truly yours,

*Booth Kellough*  
Booth Kellough.

BK:FC  
Encls.



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO



IN THE MATTER OF THE APPLICATION  
OF AMERADA PETROLEUM CORPORATION  
FOR AN ORDER ESTABLISHING PRORATION  
UNITS AND UNIFORM SPACING OF WELLS  
FOR THE BAGLEY-SILURO-DEVONIAN POOL  
LEA COUNTY, NEW MEXICO

CASE NO. 249

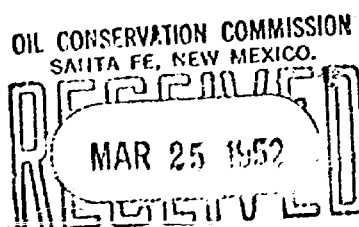
APPLICATION FOR EXTENSION OF ORDER NO. R-69

Comes now Amerada Petroleum Corporation, and alleges  
and states:

1. That on May 1, 1951, the Oil Conservation Commission entered its Order No. R-69, establishing 80-acre proration units and uniform spacing of wells for the Bagley-Siluro-Devonian Pool, Lea County, New Mexico, for a period of one year.
2. A copy of Order R-69 is attached hereto marked Exhibit A and made a part hereof.
3. That in order to prevent waste, avoid the drilling of unnecessary wells and to conserve critical materials and tubular goods required for drilling operations and to protect the correlative rights of all interested parties, Order No. R-69 should be extended in all its particulars for an additional period of one year from May 1, 1952.

Wherefore, applicant respectfully requests that the Commission set this application for hearing and that due and proper notice be given as required by law and that at the conclusion of said hearing the Commission enter its order continuing Order No. R-69 in all particulars for an additional period of one year from May 1, 1952.

DATED this 24th day of March, 1952.



*Harry D. Page*  
Harry D. Page

*Booth Kellough*  
Booth Kellough

ATTORNEYS FOR AMERADA  
PETROLEUM CORPORATION

EXHIBIT A

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE NO. 249

ORDER NO. R-69

IN THE MATTER OF THE APPLICATION OF  
AMERADA PETROLEUM CORPORATION FOR AN  
ORDER ESTABLISHING PRORATION UNITS  
AND UNIFORM SPACING OF WELLS FOR THE  
BAGLEY-SILURO-DEVONIAN POOL, LEA  
COUNTY, NEW MEXICO

ORDER OF THE COMMISSION

This matter came on for hearing at Santa Fe, New Mexico,  
on April 24, 1951, on the application of Amerada Petroleum  
Corporation to establish proration units and uniform spacing of  
wells for the Bagley-Siluro-Devonian Pool, in Lea County, New  
Mexico.

The Commission having heard the evidence presented and being  
fully advised,

**FINDS:**

1. That due public notice having been given as required  
by law, the Commission has jurisdiction of the subject matter  
and of the parties.
2. That all of the allegations contained in the application  
filed herein by Amerada Petroleum Corporation are true and  
correct.
3. That the probable productive limits of the Bagley-  
Siluro-Devonian Pool ascertainable from the information avail-  
able at the time of the hearing in this case comprise the fol-  
lowing land in Lea County, New Mexico:

All of Sec. 34 - T 11 S - R 33 E  
NW and S/2, Sec. 35 - T 11 S - R 33 E  
N/2 and SE, Sec. 3 - T 12 S - R 33 E  
All of Sec. 2 - T 12 S - R 33 E  
E/2 NW and N/2 NE, Sec. 11 - T 12 S - R 33 E

**IT IS THEREFORE ORDERED:**

1. That 80 acre proration units are hereby established  
for the Bagley-Siluro-Devonian Pool as delineated above, which  
shall comprise the West half and East half of each Governmental  
quarter section, except the following units, to-wit:

N/2 NW, Sec. 35 - T 11 S - R 33 E  
S/2 NW, Sec. 35 - T 11 S - R 33 E  
N/2 NW, Sec. 3 - T 12 S - R 33 E  
S/2 NW, Sec. 3 - T 12 S - R 33 E

N/2 NE, Sec. 2 - T 12 S - R 33 E  
SW NE and NW SE, Sec. 2 - T 12 S - R 33 E  
SE NE and NE SE, Sec. 2 - T 12 S - R 33 E  
S/2 SE, Sec. 2 - T 12 S - R 33 E  
N/2 NE, Sec. 11 - T 12 S - R 33 E

2. All wells drilled into the Bagley-Siluro-Devonian Pool shall be located in the center of the Northwest and the Southeast quarters of each governmental quarter section, with a tolerance of 150 feet in any direction to avoid surface obstructions.

3. That no well shall be drilled or produced in said Pool except in conformity with the spacing pattern set forth above without special order of the Commission after notice and hearing.

4. That all wells producing or hereafter completed in the Bagley-Siluro-Devonian Pool are hereby given an allowable equivalent to one and one-half times the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided for in the rules and regulations of the Commission.

5. If any well is drilled as an exception to the well spacing pattern set forth above under special order of the Commission, the allowable for such well shall be the top allowable for a 40 acre proration unit with the deep pool adaptation, as provided by the rules and regulations of the Commission.

6. This order shall cover all of the Bagley-Siluro-Devonian common source of supply and any extension thereof as may be determined by further development, and shall continue in force for a period of one year from the first day of May, 1951.

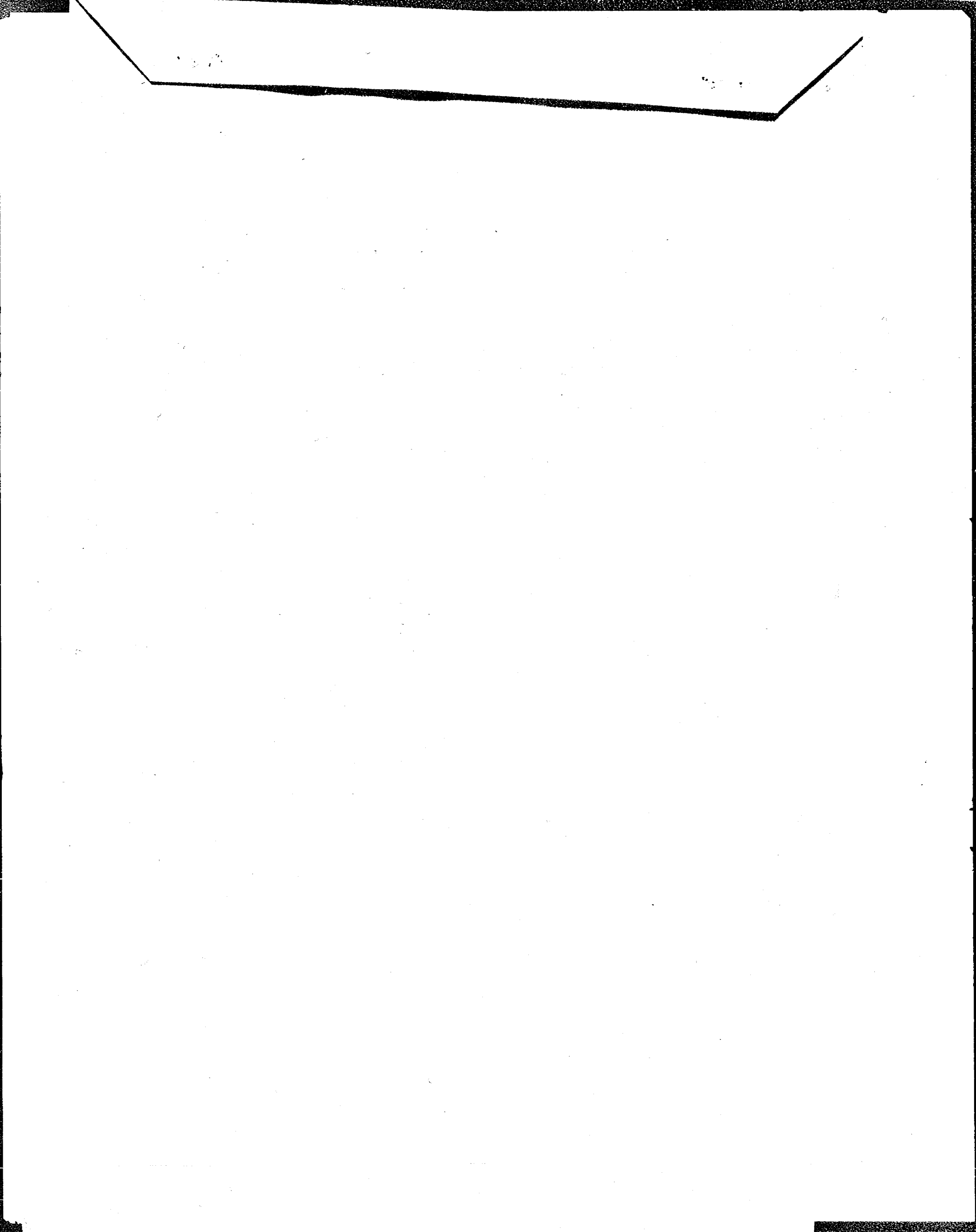
Done this 1st day of May, 1951.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

s/ Edwin L. Mechem, Chairman  
EDWIN L. MECHEM

s/ Guy Shepard  
GUY SHEPARD, MEMBER

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



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R. 33 E.

