[redacted]

Case No.

191

Application, Transcript,
Small Exhibits, Etc.

PETROLEUM AND ITS PRODUCTS

GULF OIL CORPORATION

P. O. BOX 661 · TULSA 2, OKLAHOMA

GYPSY
DIVISION

RUSH GREENSLADE
VICE PRESIDENT

February 8, 1950

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
FEB 10 1950
RECEIVED

Mr. R. R. Spurrier, Secretary
Oil Conservation Commission
State of New Mexico
Santa Fe, New Mexico

Dear Sir:

Attached you will find joinder of Gulf Oil Corporation in the application of Amerada Petroleum Corporation for rehearing in Case No. 191, which is the application for 80-acre spacing order in the Bagley Siluro-Devonian Pool, Townships 11 and 12S, Range 33E, Lea County, New Mexico.

Please place this joinder in the file of this case and advise me of the decision of the Commission on this application.

Yours very truly,

R. S. Knappen

RSK:wh
Att'd

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND THE UNIFORM SPACING OF WELLS IN THE BAGLEY SILURO-DEVONIAN POOL IN LEA COUNTY, NEW MEXICO.	CASE NO. 191 ORDER NO. R-2

JOINDER IN APPLICATION FOR REHEARING

Comes, now, Gulf Oil Corporation, being interested in the above styled case and joins amicus curiae with Amerada Petroleum Corporation in its Application for Rehearing filed in said case, and requests the Commission to enter its order establishing eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application filed herein and the evidence presented by applicant at the hearing of this case.

Russell Shows

Attorneys for
Gulf Oil Corporation

J. M. HERVEY
HIRAM M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. HUNKER, JR.

WILLIAM C. SCHAUER

LAW OFFICES
HERVEY, DOW & HINKLE
ROSWELL, NEW MEXICO

December 30, 1950

191

Mr. George Graham, Attorney
State Land Office
Santa Fe, New Mexico
and
Mr. Donald McCormick
Attorney at Law
Carlsbad, New Mexico

Gentlemen:

We hand you herewith copies of Motion and Order dismissing the appeal of the Amerada Petroleum Corporation in the Bagley Case, No. 8485. The Order was signed by Judge Harris on December 27th.

With kindest regards and best wishes for the New Year, we are,

Yours very truly,

HERVEY, DOW & HINKLE

By

CEH/se
Encls.

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191	CASE NO. 8485

ORDER FOR DISMISSAL

This matter came on this day to be heard in open Court upon the motion of the Amerada Petroleum Corporation, Petitioner in the above styled cause for an order dismissing said cause with prejudice at Petitioner's costs and the Court having considered said motion and being fully advised in the premises

IT IS THEREFORE ORDERED, ADJUDGED AND DECREED by the Court that this cause be and the same is hereby dismissed with prejudice at the cost of the Amerada Petroleum Corporation.

Done at Roswell, New Mexico, this the _____ day of December, 1950.

_____
District Judge

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191	CASE NO. 8485

MOTION FOR DISMISSAL

Comes the Amerada Petroleum Corporation, Petitioner in the above styled cause, acting by and through its attorneys of record and moves the Court to dismiss said cause with prejudice at Petitioner's cost.

HARRY PAGE

BOOTH KELLOUGH

Tulsa, Oklahoma

HERVEY, DOW & HINKLE

BY

Roswell, New Mexico,
Attorneys for Petitioner,
Amerada Petroleum Corporation.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 997
Roswell, New Mexico
January 19, 1950

NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
JAN 23 1950
RECEIVED

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

Gentlemen:

Reference is made to Case 191, application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 well in the NW¼ SE¼ sec. 2, T. 12 S., R. 33 E., N.M.P.M., Lea County, New Mexico. Testimony on the application was presented before the Oil Conservation Commission at a public hearing held in Santa Fe on December 20, 1949.

In its testimony on the application, Amerada Petroleum Corporation requested the establishment of proration units of 80-acres, the units to include the east half and west half of each 160-acre legal quarter section with a few exceptions as to proration units based on lease ownership, and the wells to be located in the center of the northwest and southeast 40-acre tracts of each legal quarter section, with a tolerance of 150 feet for surface obstructions. It was testified that one well would drain 80 acres in the Devonian formation under consideration and that in view of the reported cost of future wells, estimated at $225,000 per well, it would be waste to require the drilling of more than one well per 80-acre tract. The applicant suggested that exceptions to well spacing and proration units should be allowed but on the basis of a reduced allowable in such manner as the Commission should decide in each case. The applicant further requests that the 80-acre proration units be granted an allowable not in excess of the normal top allowable for a 40-acre proration unit under statewide regulations for the depth involved.

Considerable testimony was presented by Texas Pacific Coal and Oil Company in contradiction of that submitted by Amerada Petroleum Corporation. The testimony by Texas Pacific indicates that structural and reservoir conditions of the Bagley-Silurian-Devonian pool are not adaptable to 80-acre spacing and that wells should be drilled on a 40-acre spacing basis to obtain satisfactory recovery of oil and gas from the Devonian formation, otherwise waste would occur. This is a brief review of the essential factors involved in this case.

The purpose of this letter is to inform the Commission that this office of the U. S. Geological Survey, under the circumstances existing, prefers that development of the Devonian formation in the Bagley-Devonian pool be conducted on the basis of one well per 40-acre tract, with proration units of the same size. In other words, that no exception be granted to the statewide rules and regulations. The extreme dips in the producing formation indicate structural conditions which would not permit the drilling of necessary offset wells to protect correlative rights. Also that records available to this office for similar producing formations with low permeability and porosity as testified to exist in the Devonian formation in the Bagley pool, indicates that a well will not adequately drain 80 acres without waste.

Furthermore, the application of a 40-acre top unit allowable to an 80-acre proration unit would in effect cause discrimination between pools, as other Devonian pools to the same depth should receive two 40-acre allowables per 80-acres while the Bagley-Devonian pool would receive only one 40-acre allowable per 80-acre proration unit. New Mexico statutes and regulations provide for equitable allocation between pools. This is necessary for protection of royalty interests as well as those of operators. An exception to the proration unit as proposed by Amerada under which a 40-acre allowable for an 80-acre unit would be reduced would cause an even greater inequity and discrimination, and would in effect tend to prohibit the drilling of wells under exceptions by reason of the economics involved.

It is the opinion of this office that the application of Amerada Petroleum Corporation under Case 191 should be denied. Our interest in the case is based on the Federal lands under lease on the west side and to the south of the Bagley pool, as now developed. Some of these lands should prove to be productive in the Devonian formation by subsequent drilling.

In order that the position taken by this office as heretofore expressed to the Oil Conservation Commission may be clarified, I wish to state that we have no objection to exploratory development of deep formations on the basis of 80-acre spacing providing it is done with a definite understanding that such a spacing program would be only of a temporary nature, the final spacing program being established after the essential factual data is obtained by drilling. I made essentially this statement, which should appear in the record of testimony in Case 149, application of Mid-Continent Petroleum Corporation for an order establishing 80-acre proration units for wells drilled in the Crossroads pool to a depth of below 12,000 feet in the

Devonian pool, which was held in Santa Fe on July 15, 1948. Sufficient wells have now been drilled in the Bagley pool to determine that 80-acre spacing there is not justifiable.

Very truly yours,

Foster Morrell

Foster Morrell,
Oil and Gas Supervisor,
Southwestern Region.

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-3

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

THOMAS J. MABRY, CHAIRMAN

GUY SHEPARD, MEMBER

R. R. SPURRIER, SECRETARY

October 16, 1950

Mr. Booth Kellough
Amerada Petroleum Corporation
P. O. Box 2040
Tulsa 2, Oklahoma

Dear Mr. Kellough:

This is in reply to your letter of October 6.

The check for the duplications of the Bagley Case record should be made out to the Oil Conservation Commission.

Thanking you for your consideration in this matter, we are

Very truly yours,

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. Spurrier
Secretary-Director

RRS:bw

GENERAL OFFICES
120 BROADWAY NEW YORK

AMERADA PETROLEUM CORPORATION

BEACON BUILDING
P. O. BOX 2040
TULSA 2, OKLA.

October 6, 1950

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

Dear Mr. Spurrier:

We shall be glad to assume the expense of the additional copies of the record in the Bagley case mentioned in your letter of October 4, 1950. Will you please advise to whom the check should be made payable.

OCC

Very truly yours,

Booth Kellough

BOOTH KELLOUGH
Attorney

BK:l

cc Mr. Clarence Hinkle
Hervey, Dow & Hinkle
Attorneys at Law
Roswell, New Mexico

GENERAL OFFICES
120 BROADWAY, NEW YORK

AMERADA PETROLEUM CORPORATION
BEACON BUILDING

P. O. BOX 2040

TULSA 2, OKLA.

July 22, 1949

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
JUL 25 1949
RECEIVED

Mr. R. M. Knoepfel, Chairman
New Mexico Nomenclature Committee
Atlantic Refining Company
Box 808
Carlsbad, New Mexico

Dear Mr. Knoepfel:

Re: Bagley Area, Lea County, New Mexico:

We have just completed our BTA #1 in the Devonian formation through perforations 10950-65 and have filed a completion report with the New Mexico Conservation Commission. This well flowed 400 barrels in five and one-half hours through a 1/2" choke with a gas-oil ratio of 28. Our Caudle #1 in Section 10 was low and dry in the Devonian and is being completed in the Pennsylvanian.

We are preparing to make an application to the New Mexico Conservation Commission for 80-acre spacing in this area. In view of the outcome of the Caudle it appears that you may not wish to include as much area as the Bagley-Devonian Pool as was discussed at your meeting on June 29. It is our understanding that the usual policy of your Committee is to recommend four sections around each well as pool limits. The Caudle would lie within these limits but by eliminating the quarter section upon which it is located this would leave an area consisting of the SE/4 of Sec. 34, the S/2 of Sec. 35, the SW/4 of 36, in Township 11S, Range 33E, the E/2 of Sec. 3, all of Sec. 2, the W/2 of Sec. 1, the N/2 of Sec. 11, and the NW/4 of Sec. 12, in Township 12S, Range 33E. In view of the Mid-Continent and TP wells drilling in the east portion of this area it might be reasonable to include all of Section 1.

We would appreciate it if your Committee will recommend an area to be designated as the Bagley-Devonian Pool to the New Mexico Conservation Commission prior to the spacing hearing.

We expect you have heard that the Amerada BTB #1 in Section 26 is drilling below 10,300 feet. It flowed 222 barrels of 58° API

oil, during a two and one-half hour drillstem test from 10,150-200. The gas-oil ratio was 414. A deeper test produced salt water. We expect to complete this well in the near future and plan at that time to make an application for 80-acre spacing. While the area between the BTA and BTB can well connect, we expect your committee and the Commission would prefer to classify these as two separate pools until conclusive evidence is obtained by drilling.

Attached is a map for your use and information. If we can be of any further assistance to you, please feel free to call on us.

Yours very truly,

AMERADA PETROLEUM CORPORATION,

By: John P. Hammond

JPH-J
Encl.

cc: Mr. R. R. Spurrier, % State of New Mexico Oil Conservation Commission, Sante Fe
Mr. Glenn Staley, Lea County Operators Committee, Hobbs
Mr. Ester Morrell, USGS, Roswell

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, of the following public hearing to be held December 20, 1949, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

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

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico. This is a readvertisement.

Case 207

In the matter of application of Stanley L. Jones, Inc., a New Mexico Corporation, for an order approving an unorthodox location for Stanley L. Jones, Inc., State No. 13, 338 feet south of the north line and 73 feet west of the east line NE/4 NE/4 NE/4 of Section 23, Township 18 South, Range 27 East, N.M.P.M. in the Artesia pool, Eddy County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION
(SEAL) R. R. SPURRIER,
Pub. Dec. 7, 1949. Secretary

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 7th day of December, 1949, and the last publication 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.

Will Harrison
Editor-~~Manager~~

Subscribed and sworn to before me this 8th day of December, A.D., 1949

Anna K. Ormsbee
Notary Public

My Commission expires
June 14, 1953

PUBLISHER'S BILL

41 lines, one time at $ 4.10

____ lines, ____ times, $ ____

Tax $ ____

Total . . . . . $ 4.10

Received payment,

_____

By _____

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND THE UNIFORM SPACING OF WELLS IN THE BAGLEY SILURO-DEVONIAN POOL IN LEA COUNTY, NEW MEXICO.	CASE NO. 191 ORDER NO. R-2

JOINDER IN APPLICATION FOR REHEARING

Comes, now, Mid-Continent Oil and Gas Company, being interested in the above styled case and joins amicus curiae with Amerada Petroleum Corporation in its Application for Rehearing filed in said case, and requests the Commission to enter its order establishing eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application filed herein and the evidence presented by applicant at the hearing of this case.

J. H. Crocker

J. H. CROCKER, ATTORNEY
BOX 381,
~~TULSA, OKLAHOMA~~

Attorneys for Mid-Continent ~~Oil and Gas Company~~ Petroleum Corporation

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

1201

JOSEPH L. EGAN
PRESIDENT

SYMBOLS

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

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

LA62 DA294 FWA63

1950 APR 26 AM 11

FW BJ081 DL PD=BJ FT WORTH TEX 26 1219P

JACK M CAMPBELL, ATWWOD MALINE & CAMPBELL=

K P WHITE BLDG ROSWELL NMEX=

SO FAR AS I CAN DETERMINE HERE EXHIBITS I J, K, AND L CONSTITUTE SEPARATE SHEETS OF CORE ANALYSES AND CORE GRAPH BOUND IN ORANGE COVER. EXHIBIT P IS LARGE CROSS SECTION CALL ME FROM SANTA FE IF ALL EXHIBITS CANNOT BE LOCATED=

E T ADAIR=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

GOVERNOR THOMAS J. MABRY
CHAIRMAN
LAND COMMISSIONER GUY SHEPARD
MEMBER
STATE GEOLOGIST R. R. SPURRIER
SECRETARY AND DIRECTOR

NEW MEXICO
OIL CONSERVATION COMMISSION

P. O. BOX 871
SANTA FE, NEW MEXICO

April 27, 1950

Mr. Jack Campbell
Atwood, Malone and Campbell
Roswell, New Mexico

RE: Exhibits in Case No. 191

Dear Mr. Campbell:

We have been arranging the exhibits in this case and find a few discrepancies we would like to discuss with you.

Texas-Pacific Coal & Oil Company

A. Photostatic copy of letter (1 copy) OK

B. Photostatic copies of three leases (1 copy each) These are marked "H" "I" and "J"

There is also a map marked Exhibit "B" which probably represents the drainage area of the State BTD No. 1. This is the map on which Mr. Christie drew the circle. Do you know what map this is?

C. Lease ownership plat

D. Mineral fee ownership plat

E. Top of Gloriata - contour map

F. Contour map - Top Pennsylvanian

G. Contour map - Top Devonian

H. Schlumberger log - TP C&O, State B#1 (This was marked "K" and should be "H")

I. How many of these should we have? Find only one marked "L" which takes in
J. the intervals 10824 - 837 and 10,874 - 914
K.

L. Core graph, mentioned above.

M. Dense core - 10,824 - 830

N. Prod. core

O. Overlay contour map - Top Devonian

P. Cross section from SW to NE

Q. General Cross section

Amerada

1. Outlined area of Bagley, recommending required or designated spacing

2. Schlumberger of BTA

3. Schlumberger of BTC

4. Schlumberger of BTD

There are just a few differences, but we would like to straighten them out so the exhibits will be in good order. Thanks very much.

Very truly yours,

bpw

Secretary and Director

cc

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

April 27, 1950

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Atwood, Malone and Campbell
Roswell, New Mexico

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Secretary and Director

cc

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

April 27, 1950

C

Mr. Jack Campbell
Atwood, Malone and Campbell
Roswell, New Mexico

O

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G. Contour map - Top Devonian

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I. How many of these should we have? Find only one marked "L" which takes in
J. the intervals 10224 - 237 and 10,874 - 914
K.

L. Core graph, mentioned above.

M. Dense core - 10,824 - 830

N. Prod. core

O. Overlay contour map - Top Devonian

P. Cross section from SW to NE

Q. General Cross section

Amerada

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bpw

Secretary and Director

cc

April 27, 1950

Mr. Jack Campbell
Atwood, Malone and Campbell
Roswell, New Mexico

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Texas-Pacific Coal & Oil Company

A. Photostatic copy of letter (1 copy)

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There is also a map marked Exhibit "J" which probably represents the drainage area of the State SWD No. 1. This is the map on which Mr. Christie drew the circle

C. Lease ownership plat

D. Mineral fee ownership plat

E. Top of Glorieta - contour map

F. Contour map - Top Pennsylvanian

G. Contour map - Top Devonian

H. Schlumberger log - TP COO, State B/1 (This was marked "K" and should be "H")

I. How many of these should we have? Find only one marked "L" which takes in
J. the intervals 10,874 - 887 and 10,874 - 914
K.

L. Core graph, mentioned above.

M. Dense core - 10,874 - 890

N. Prod. core

O. Overlay contour map - Top Devonian

P. Cross section from SW to NE

Q. General Cross section

Amerada

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Very truly yours,

bpw

Secretary and Director

cc

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

J. O. SETH
A. K. MONTGOMERY
OLIVER SETH
WM. FEDERICI

January 16, 1950

Mr. R. R. Spurrier
Oil Conservation Commission
Santa Fe, New Mexico

Re: Case No. 191
IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTA NO. 1 WELL, NW/4 SE/4 SEC. 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO

Dear Mr. Spurrier:

At the time of the hearing in this matter, on December 20 last, the parties were given thirty days within which to file a brief. I enclose herewith three copies of the Amerada Petroleum Corporation Brief together with three copies of suggested Findings of Fact, et cetera, on behalf of that Company.

Very truly yours,

JOS-mh

Encls.

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTA NO. 1 WELL, NW/4 SE/4 SEC. 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO	CASE NO. 191

MEMORANDUM BRIEF

This is the application of Amerada Petroleum Corporation for eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool in part of Townships 11 and 12 South, Range 33 East, Lea County, New Mexico.

There are two principal questions in this case. (1) First is whether eighty-acre proration units and the well spacing pattern proposed by Amerada is justified from the standpoint of reservoir performance. (2) The second main question is whether the proposed order requested by Amerada will protect the correlative rights of all persons owning an interest in this pool, so that they may recover their just and fair share of the

oil and gas recoverable from the pool in accordance with their property ownership.

Amerada's technical witnesses presented testimony as to the type and quality of the subject reservoir and as to its predicted performance or production based on modern engineering concepts of reservoir performance and on the actual performance of other known reservoirs of similar characteristics. This testimony establishes that:

1. One well will adequately drain at least 80 acres, and

2. The correlative rights of all interested parties will be protected by the well spacing and production allocation order proposed by Amerada.

The Texas Pacific Coal and Oil Company, appearing in opposition to the proposed order, presented much evidence having nothing to do with the two essential points involved in this hearing, and practically no concrete or abstract evidence on these two essential points.

If the opposition made any clear point it was that they want a spacing and allocation formula which will permit them to gain the greatest amount of production for themselves without

regard to the ultimate recovery from the reservoir as a whole and without regard to the correlative rights of all interested parties.

Applicant is asking for the establishment of eighty-acre units, each of which (except certain exceptions referred to below to avoid pooling of separately owned tracts) shall comprise the East Half and the West Half of each governmental quarter section within the probable productive limits of the pool, as delineated on the map introduced as applicant's "Exhibit 1". The well spacing pattern proposed by applicant is that all wells be located in the center of the Northwest Quarter and the Southeast Quarters of each governmental quarter section. The map introduced as applicant's "Exhibit 1" shows the location of all drilled and drilling wells in this pool and shows the proposed location of all wells that may be drilled according to the spacing pattern by cross marks. The map also shows lease and royalty ownership but does not specifically set out each proration unit. Only the proration units which are exceptions to the general plan are shown on the map by dotted lines. For your convenience we are enclosing a copy of the map.

Pursuant to the request by the Commission, we are enclosing a draft of findings of fact and conclusions of law which we think should be entered in this case. We have

prepared the conclusions of law in the form of a proposed order, which we respectfully request the Commission to enter in this case.

ORDER PROPOSED BY AMERADA PETROLEUM CORPORATION

In substance, applicant's proposed order provides for the creation of eighty-acre proration units to be arranged as described above. All wells are then to be located according to the uniform spacing pattern as set out above, with a tolerance of 150 feet in any direction to avoid surface obstructions. The proposed order further provides that the Commission shall have the power and authority for good cause shown to permit an exception to the well spacing pattern herein proposed, after notice and hearing, but in the event such exception is granted that the allowable shall thereupon be reduced in an amount to be determined by the Commission in their discretion according to the evidence submitted at the hearing. The proposed order requested by applicant further provides that the allowable for each proration unit shall be computed as a forty-acre proration unit with the deep pool adaptation provided for in the general rules and regulations, with a provision that the Commission reserves the right at some future time, upon

proper application and after notice and hearing, to increase the allowable if the evidence so justifies.

A detailed analysis of the essential testimony presented at this hearing is given below, which we believe supports the above conclusions and justifies the proposed order.

(The letter "R" as used herein refers to the Record followed by the page number.)

1. ONE WELL WILL EFFECTIVELY DRAIN AT LEAST EIGHTY ACRES

The first question requires a brief look at the facts with reference to the character of this pool.

It is undisputed that the Bagley Siluro-Devonian Pool (which we shall for convenience call the "Bagley Pool") is producing from the Devonian formation at a depth of approximately 11,000 feet below the surface. (R. 10-11) In the BTA No. 1 Well, the top of the Devonian pay section was 10,790 (R. 11) and the base of the pay section is approximately 10,980 (R. 11). The well is producing through perforations from 10,950 to 10,965. (R.11) Other wells show that the formation dips rather steeply toward the southwest. (R. 12; 22-23) It will be noted that the wells drilled in this pool run in a line from southwest to northeast, except for Amerada-State BTC. This well is the highest well in the Bagley Pool. (R. 22) It is indicated by the completed wells that this pool has an axis running, roughly, north by

west to south by east, with a rather sharp dip off the the southwest. However, because of the location of the wells, they give a rather limited geological control and very little is known as to the exact dip of the formation outside of the limited area approximating a line between the various wells. (R. 67;77)

It was also undisputed that the energy of this pool is water drive. Mr. R. S. Christie and Mr. C. V. Millikan, both petroleum engineers for Amerada Petroleum Corporation, testified that this pool has an effective water drive. (R. 16; 51; 97-98) This was not denied by either of the witnesses for the Texas Pacific Coal and Oil Company (hereinafter called protestant) and was in fact substantially admitted by them and their entire hypothetical testimony and exhibit are based on an assumed water drive reservoir (R. 93).

It was further undisputed that the Bagley Pool is a reservoir of at least average, and probably better than average, porosity and permeability for Devonian formation pools.

Mr. Veeder, geologist for Amerada, testified that "This pool has good porosity and apparently permeability." (R. 13) And he further testified that it has continuous, although not uniform, porosity and permeability. (R. 25;31; 39; 44-45) Mr. Carter, geologist for protestant, testified that this pool has a porosity

which is average and in some places superior or better than most Devonian pools. (R. 71;82) His direct testimony was as follows:

> "Mr. McCormick: How does that compare with other pools?
>
> "The Witness: Well, I am --
>
> "Mr. McCormick (interrupting): I mean, is it good or bad or medium, or what, so far as porosity is concerned?
>
> "The Witness: I would say it is approximately average in the type of reservoir that we have here.
>
> "Mr. McCormick: Approximately what?
>
> "The Witness: Approximately average for the type of reservoir that we have here. It might be a little higher than average.
>
> "Mr. McCormick: That is the porosity?
>
> "The Witness: Yes.
>
> "Mr. McCormick: And the permeability, is that higher, higher than the average?
>
> "The Witness: Well, I am not in a position to give those - I just don't know."

Based upon this evidence that this Bagley Pool has an effective water drive, and has at least an average, if not better porosity, as compared with other Devonian pools, and has a continuous permeability, it was concluded by both Mr. Millikan and Mr. Christie that one well would efficiently and effectively drain an area of at least eighty acres. This conclusion was based upon the further information obtained by

comparison with analogous Devonian pools of Hightower, Knowles, Crossroads and Jones Ranch, and further supported by the comparable bottom-hole pressure information obtained from the wells drilled in this Bagley Pool as compared with the bottom-hole pressure information in the wells in the analogous Devonian pools in the area, which are being developed on eighty-acre spacing. (R. 19; 97-98) The fact that there has been very little decline in pressure in the analogous pools and in this pool confirms this conclusion. The real test of drainage is the performance of the wells. The production from the wells drilled in the analogous pools on eighty-acre spacing shows that they are effectively draining the reservoir.

Mr. Millikan summed up the point, as follows: (R. 97-98)

"Q (by Mr. Kellough): Mr. Millikan, in your opinion on this Bagley Reservoir, will one well adequately and efficiently drain an area of at least 80 acres?

"A I believe it will.

"Q Would you care to make any statement to the Commission in explanation of your conclusion?

"A I think we have several points that indicate that it is a good water drive reservoir. I don't believe there has been any controversy of the testimony that it is a rather - that it is permeable, I would say more-than-average permeable reservoir. As a general rule, we find that low gas-oil ratios are present where we do have a good water drive, that in itself not being conclusive, however, but as a general rule that condition does exist.

"We have a pressure there that is about equal to hydrostatic head and about normal for that depth of reservoir. We have found a good quantity of water to the side and below the oil reservoir itself. The indications, I believe, are fairly good that we have a large aquafer, although we don't have sufficient control to demonstrate it definitely. We have, also, some other pools established in that same stratigraphic position that is the top of the Devonian in this general area, and on two of those I think we have evidence of a good water drive. One of those is Crossroads. I am not familiar too much with the detail of that, but it is my understanding there has been no declining pressure in the approximate year and a half that those wells have been in. I believe two of them are producing some water and the dry holes that have been drilled around them have shown evidence of an ample quantity of water. That also has a low gas-oil ratio, but not as low as is present in these Bagley wells.

"This field on which we have more history is just across the state line in Texas, in which there are eight wells in the field, which has been developed on eighty-acre spacing, and that pressure under an allowed of 240 barrels a day on the 31 a day allowed, did have a little decline in pressure; earlier this year when the production was reduced we had an increase in pressure, during the first eight months of this year. I think, combining all of that gives very good evidence that it is quite reasonable to expect a good water drive in the Bagley."

Now let us look at what protestants have offered in opposition to the conclusion that one well in this pool will effectively drain an area of at least eighty acres.

There is only one direct statement that one well will not effectively drain an area of eighty acres. It is Mr. Schoehle's answer to the following rather ambiguous question: (R. 95)

"Q Do you think - in your opinion, do you believe that one well to 80 acres as proposed here will effectively drain all recoverable oil under the 80-acre tract, or under 80 acres of oil if you want to put it on that basis, in attempting to get away from correlative rights and move - say you got Jim Doe's oil, some of his oil, and he got some of yours. In any event, one well, regardless of how it is located, will not, in your opinion, regain effectively all recoverable oil under 80 acres?

"A No, it won't. It will not."

This conclusion is wholly unexplained and unsupported. Furthermore, it is actually contrary to the rest of his entire testimony which assumed an effective water drive reservoir wherein one well would drain an area of 80 acres. His Exhibit "Q", prepared to show the drainage of a mythical water drive pool, assumed a drainage area of 80 acres per well. If his statement quoted above is correct then the rest of his testimony and his exhibit are wholly irrelevant.

Also Mr. Carter, protestants' geologist, stated that this pool is of equal or better porosity than the average Devonian pool and the undisputed evidence is that it has an effective water drive. Thus it must be Mr. Schaehle's opinion that an average Devonian pool with an effective water drive cannot be effectively developed by one well to 80 acres. This is contrary to the actual experience in cases of other similar Devonian pools in the area which are being developed on 80-acre

units under orders of this Commission.

It is therefore difficult to believe that Mr. Schaehle was serious in his flat assertion that one well will not drain 80 acres in the Bagley pool.

The only other effort of protestants on this point was the testimony of Mr. Carter with reference to the core analyses in the defendant's one well. Mr. Carter testified that there were dense sections in the well. However, he did admit that there was good porosity and although varied in character, as stated above, that the pool was of average or better porosity than generally is found in Devonian pools. He did not testify that this so-called dense area would prevent one well from effectively draining eighty acres. On this point Mr. Millikan testified as follows: (R. 98-99)

> "Q Mr. Millikan, do you have any comment which you wish to make to the Commission with reference to the testimony regarding the dense areas which appeared in the core analysis introduced by the Texas Pacific Coal Company?
>
> "A Well, those dense areas are, I think, as they stated, not anything unusual in these Devonian reservoirs, or for that matter in lime reservoirs, or for that matter, in any reservoirs. We have areas or intervals or strata of varying permeability, and very often the strata are of greater or lesser thickness that might not even show any presence of oil, which I believe in our examination of samples have rather consistently shown oil and I think the permeabilities have been, perhaps, too low to get any appreciable amount of oil, I think probably some of the testimony might be a little misleading regarding continuous

or discontinuous, or uniform porosity and permeability. I think, it seems to me, in summing it up that there was not a clear distinction between vertical permeability and horizontal permeability.

"Now, it is quite true, as was testified, I believe, by Mr. Schaehle, or Mr. Carter, or perhaps both, that where we run into these dense areas, we probably do not have vertical permeability through those. In other words, this water that exists apparently entirely under this structure - the water movement is not directly vertical. I don't believe the point was made clear, but I think that we do have lateral permeability through this reservoir. In the first place, that is a common thing to expect in reservoirs. We have that in all reservoirs, and I think the concrete evidence of that is the fact that we do have an accumulation of oil above water, with such evidence as we have being that it is a relatively flat or level water table. And if we didn't have a continuous permeability through here, then how did the oil all get up there just in this, as someone referred to this morning, equivalent of a bowl turned upside down. And if we are going to have a water drive, which I think all have indicated probably exists - and if you are going to have a water drive, you have got to have that continuity of permeability throughout the reservoir."

To summarize, we think the conclusion that one well will effectively drain at least 80 acres is supported by the following evidence:

(1) That the Bagley pool has an effective water drive. This is not disputed.

(2) That the reservoir is of average or better porosity than most Devonian pools and has continuous porosity and permeability. This is admitted by protestants' own witnesses.

(3) That the experience in comparable pools in

the area supports the conclusion that one well will effectively drain an area of at least 80 acres. The actual experience at Crossroads and Jones Ranch supports this conclusion and it is also indicated by performance to date in the Hightower and Knowles pools.

The only evidence to the contrary is Mr. Schaehle's flat statement quoted above, which is wholly unsupported by the facts and actually contrary to protestants' own testimony on the issue of correlative rights.

If one well on each eighty-acre proration unit will effectively drain the pool, then an additional well on each eighty-acre unit, under any kind of a forty-acre pattern, would be an unnecessary well.

Section 69-213 of the New Mexico Statutes (1941 Ann.) provides in part as follows:

> "No owner of a property in a pool should be required by the Commission directly, or indirectly, to drill more wells than are reasonably necessary to secure his proportionate part of the production. To avoid the drilling of unnecessary wells a proration unit for each well may be fixed, such being the area which may be efficiently and economically drained and developed by one well. The drilling of unnecessary wells creates fire and other hazards conducive to waste and unnecessarily increases the production cost of oil and gas to the operator and thus also unnecessarily increases the cost of the products to the ultimate consumer."

It was suggested by Mr. Anderson, representing the Malco Refining Company (which company has no interest whatsoever

in this pool), that applicants have failed to prove that one well drilled to a density of forty acres would not recover the drilling, equipping and operation costs, and he stated that it was his opinion that if the oil recoverable by one well to forty acres would be sufficient to pay for the well, such well should be drilled on that basis. (R. 62 and argument not reported) This statement overlooks two basic facts. It first overlooks the fact that under the evidence in this case there would be no additional oil recovered by the extra well and, therefore, the additional recovery would not pay for the extra well. It further overlooks the New Mexico law quoted above, which seeks to prevent the drilling of unnecessary wells. If one well can effectively recover the oil from an area of eighty acres, under the New Mexico law the operator is not required to drill an additional unnecessary well even though the aggregate oil recovery would be sufficient to pay the cost of drilling, equipping and operating both wells. It would still be an unnecessary well even though it was a paying well. Therefore, whether the additional well required by forty-acre spacing would result in a paying well is not a proper or material issue in this case. The material question is whether such well would be an unnecessary well.

2. SPACING PATTERN PROPOSED BY AMERADA PETROLEUM CORPORATION PROTECTS CORRELATIVE RIGHTS OF ALL PARTIES

We now come to the second main question in the case,

which is whether the proposed spacing pattern protects the correlative rights of the owners of this pool so as to assure each owner of recovering the oil from this common pool to which, by reason of his ownership, he is justly entitled. It is important to bear in mind at the very outset that the doctrine of correlative rights does not mean that every owner of an interest in an oil pool is entitled to an equal amount of oil. In any pool there are relatively good leases and poor leases located favorably and unfavorably on the structure. The owner of the good lease is entitled to a greater recovery than the owner of the poorly located lease. The doctrine of correlative rights simply insures that each owner will recover proportionately the amount of oil and gas which is justified by reason of his ownership, depending upon the location of his property structurally in the pool. This can best be accomplished by uniform spacing of wells throughout the pool. The protestants' position is that there should be no uniform spacing of wells so that each property owner may locate a well anywhere upon his lease, which he considers the best position for himself, in disregard of his neighbor.

Protestants first contend that the creation of eighty-acre proration units with the well spacing pattern as recommended, will result in certain units around the edge of the pool having included therein some nonproductive acreage. However, their own geologist, Mr. Carter, on cross-examination admitted that this fact would be

the same on forty-acre spacing, or any other spacing for that matter, since there will always be units around the edge of any oil pool which will contain some nonproductive acreage. (R. 87) Therefore, this is not an argument against the well spacing pattern proposed by applicant. In fact, the order requested by applicant contains a provision where an exception could be granted in such case if the limits of the pool were known, so that the well could be located on the productive part of the unit and the allowable reduced to eliminate the non-productive acreage. This, of course, would be necessary to protect the correlative rights of the parties, since the unit at least as to productive acreage would be smaller than the normal productive unit.

It is next contended that a well drilled according to the well spacing pattern proposed by applicants will drain oil from under an adjoining owner's lease, and certain exhibits were prepared to illustrate this point. However, under protestants' own theory of well spacing which they propose the result would be no better. The illustration used by protestants assumed area of drainage comprising 80 acres around the Amerada B.T.D. well. Under protestants' theory a well might be drilled in the corner of NE of NW of Section 2, 330 feet from each lease line. If, as they apparently contend, one well will drain 40 acres, then such well would drain from under

the adjoining owner's lease to the same extent as in protestants' illustration. Mr. Carter admitted that this objection would not be corrected by applying protestants' theory of well spacing. (R. 83)

Protestants also contend in respect to the question of correlative rights that the wells under its theory should be located as high upon the structure as possible since this is an effective water drive pool and the water drive will force the oil up structure. In this way they argue that the owner of a particular lease will be able to recover more of the oil which underlies his particular lease. Mr. Schaehle prepared fictitious and hypothetical "Exhibit Q" presumably to illustrate this point. However, as stated at the very outset, this overlooks the fact that the doctrine of correlative rights is not and cannot, as a practical matter, be based upon each owner recovering every drop of recoverable oil from under his own lease, since this is a physical impossibility. Therefore, if one were to permit the location of wells at the top of the structure on each lease, the result may be decidedly inequitable to the owners of the leases on top of the structure. The owners of the top leases may by the very nature of the reservoir have a more valuable property right than the owner of a lease at the bottom of the structure in a water drive pool. Therefore,

the owners of the best leases under the doctrine of correlative rights are entitled to a greater recovery of the oil from the reservoir. The result of protestants' contention in this respect is that the location of the wells in the manner which they recommend will tend to equalize recovery. The doctrine of correlative rights is not intended to equalize recovery. The correlative rights of the parties are not protected by giving the owner of a poor lease a greater share of oil than he is entitled to recover at the expense of the owner of the better lease.

Protestants' last contention in this respect is that eighty-acre spacing will result in the drilling of more dry holes than will be drilled on forty acres. Protestants' concern for the operator in this instance is either feigned or misplaced. On cross-examination Mr. Veeder, geologist for Amerada, was asked an assumed question with respect to the Hightower Pool. (R. 35-37) In that pool the Amerada B.T.B. Well is a producing well, located in the middle of a forty-acre tract. Amerada on an eighty-acre spacing pattern then drilled a dry hole known as the "Roach Well" in the center of a forty-acre tract once removed to the south. The question was proposed that had the well been drilled in the center of the forty-acre tract immediately to the south of the B.T.B. Well, and assuming that it was a producing well, then Amerada would not have drilled the

dry hole in the Roach Well located in the center of the next forty-acre tract to the south. (R. 37) However, upon redirect examination (R. 45-46) Mr. Veeder exploded this misleading theory by pointing out that had Amerada drilled a well in the center of the forty-acre tract immediately south of the B.T.B. Well, it would then have been obligated, or Mr. Veeder as a geologist would have recommended, that his company then drill a third well in the center of the forty-acre tract still farther to the south which is the location of the Roach Well, and the result would be that instead of one well and one dry hole, Amerada would have drilled an extra unnecessary well at the cost of $225,000.00 and would still have drilled the dry hole. Therefore, under this theory advanced by protestants in the interest of economy the operator, instead of losing $225,000.00 by the dry hole, would have lost approximately a half million dollars by drilling an unnecessary well and a dry hole.

Mr. Millikan summed up the matter of correlative rights as follows:

> "Q I have one further question, Mr. Millikan. Do you have any comments which you care to make as to whether the 80-acre spacing pattern, which has been proposed by Amerada, will result in a disruption of the correlative rights of the parties in the pool, which could be remedied by any other spacing program?
>
> "A I do not see that 80-acre spacing, or 160-acre spacing, or 40-acre spacing, or 10-acre spacing, changes that picture at all.

"Certainly we have - in any oil pool, we reach the edge of the pool, and we find certain parts, whatever the spacing unit may be, that probably lie beyond the limits of oil production or beyond the limits of economic oil production. There may be some oil there, but it is not economic to drill. Then, that is, for all practical purposes, it becomes the limit of the pool. And there were no land lines there when that oil pool was formed. They have been put there subsequently, and they, as a general rule, are curve lines, as has been indicated in the testimony here; and regardless of the spacing, I think that those same conditions will exist. And the fact that we cannot recover all of the oil by 80-acre spacing, I don't see that it introduces any problems that wouldn't exist under any other spacing unit.

"Q Then, in your opinion, the spacing pattern which we have presented here will not prevent any of the owners in that reservoir from obtaining their fair and equitable share of the oil in the reservoir?

"A I think that under the recommendations that we have made here as to spacing and allocation, they will provide each operator, each landowner, each royalty owner, the opportunity to obtain his fair and equitable share of the oil from the reservoir.

PROTESTANTS' IRRELEVANT EXHIBITS

In order to dispel the thought that the length or size of the opposition is any measure of its quality, we have listed below all of protestants' exhibits to point out their utter irrelevancy to the questions involved in this case.

EXHIBITS:

"A" and "B" Farmout contract between T.P. and Amerada and copies of T.P.'s oil and gas leases. No title question is involved.

"C" and "D"	Colored maps showing mineral and royalty ownership. This was already shown by applicants' Exhibit "A" previously introduced into evidence.
"E" and "F"	Contour map of Glorietta Sand and of Pennsylvanian formation. Mr. Carter admitted neither of these maps had anything to do with this proceeding. (R. 81-82)
"G"	Contour map of Bagley Pool. Mr. arter admitted it was not an accurate representation of the actual structure. (R. 67-77)
"H"	Schlumberger of protestants' well. This shows nothing inconsistent with applicant's theory.
"I", "J", "K", "M", "N"	Core information on protestants' well. Protestants' witnesses did not contend that the density is sufficient to prevent effective drainage of 80 acres by one well.
"O"	Celluloid copy of Exhibit "G"
"P"	Hypothetical cross-section. The purpose of this exhibit was not disclosed by the witness. (R. 78-81)
"Q"	Hypothetical cross-section of mythical water drive reservoir.

INCIDENTAL LEGAL QUESTIONS REGARDING FORCED POOLING OF SEPARATELY OWNED TRACTS

Some wholly extraneous issues have been injected into the case.

1. Protestants proved that they owned a lease, forty acres of which is located in this Bagley Pool and the balance located some place outside. (R. 65) They argued that if

eighty-acre proration units were adopted it would require the pooling of this forty acres with an adjoining forty-acre tract owned by applicant, and the result would be that the well on protestants' forty-acre tract would not hold the outside acreage beyond the primary term of the lease. This is not a correct conclusion of the law, but first let us point out that the spacing pattern whether it be 160 acres, 80 acres, 40 acres, 20 acres or 10 acres, does not change the legal problem involved. The same question would be involved if two twenty-acre tracts were pooled into one forty-acre unit, or two ten-acre tracts into a twenty-acre unit, or what have you. The second point is that well spacing is a matter of conservation and it is of no proper concern to this Commission whether a lease outside of an existing oil pool will or will not be held beyond the primary term by a well located on that part of the lease within the oil pool. The law with reference to the implied covenants of oil and gas leases dictates the development which will be required of any operator. However, in any event, the question is settled in the case of State ex rel Shell Corp. v. Worden, Commissioner of Public Lands (1940), 44 N.M. 400; 103 P.(2d) 124, where it was held that in a state lease in New Mexico where a separate portion of the lease has been assigned and oil discovered on the separately assigned portion, such well will hold the entire lease beyond the primary term. The effect of

pooling is an assignment by each to the other of part of his lease rights in the pooled reservoir.

2. The question was asked whether the situation would have been the same if the well was located on that part of the unit not covered by the lease having the outside acreage. This is an open question in New Mexico, but has been decided by the Supreme Court of Louisiana in the case of Hunter Company v. Shell Oil Company (1947) 211 La. 893; 31 So. (2d) 10, which holds that a well on a forced unit in Louisiana holds each and every lease, part of which is in the unit, as to all acreage including the outside acreage. See Section 8-1138, New Mexico Statutes, 1941 Anno. and Sec. 69-213, New Mexico Stat. 1941 Anno.

However, again we wish to point out that this problem exists regardless of the size of proration units or the spacing of wells. It can apply, as stated above, with equal force to two twenty-acre tracts in a forty-acre unit, as well as it can to two forty-acre tracts in an eighty-acre unit.

3. It also was suggested that the Commission may have no authority to enter a pooling order applicable to state leases. This contention is answered by Sec. 69-213 and Sec. 8-1138, New Mexico Statutes Anno., referred to above. There is no question but that the statutory authority exists. The only reason for the exceptions to the location of the proration units recommended by applicant was an effort to avoid the necessity of pooling agreements or forced pooling applications

where, without disturbing in any manner the well spacing pattern, single ownerships could be combined. This, of course, is a matter for the discretion of the Commission. The insinuation at the trial that these exceptions were made by Amerada in order to include its poor acreage with the good acreage of the Texas Pacific Coal & Oil Co. is unwarranted, malicious and wholly unfounded in fact and designed only to prejudice the Commission. (R. 105-106)

CONCLUSION

When the entire matter is carefully considered, it appears that protestants' position boils down to the proposition that well spacing should be established according to lease ownership, and by that they mean protestants' lease ownership. They asked that they be permitted to drill anywhere upon their lease in order to crowd their neighbor and get all of the oil they can for themselves. Viewed from the purely selfish standpoint of protestants' own company, this may appear to be a laudable motive; however, it is not one which the other operators in the field think should be accomplished at their expense.

The operators in this field are Amerada Petroleum Corporation, Mid-Continent Oil and Gas Company, Phillips Petroleum Company, Gulf Oil Corporation and Texas Pacific

Coal and Oil Company. Out of all of these operators it is significant to note that the only company objecting to the application for a uniform spacing and eighty-acre proration units in this Bagley Pool is the protestant.

We respectfully submit that the proposed order herein submitted should be granted by the Commission.

SETH AND MONTGOMEY

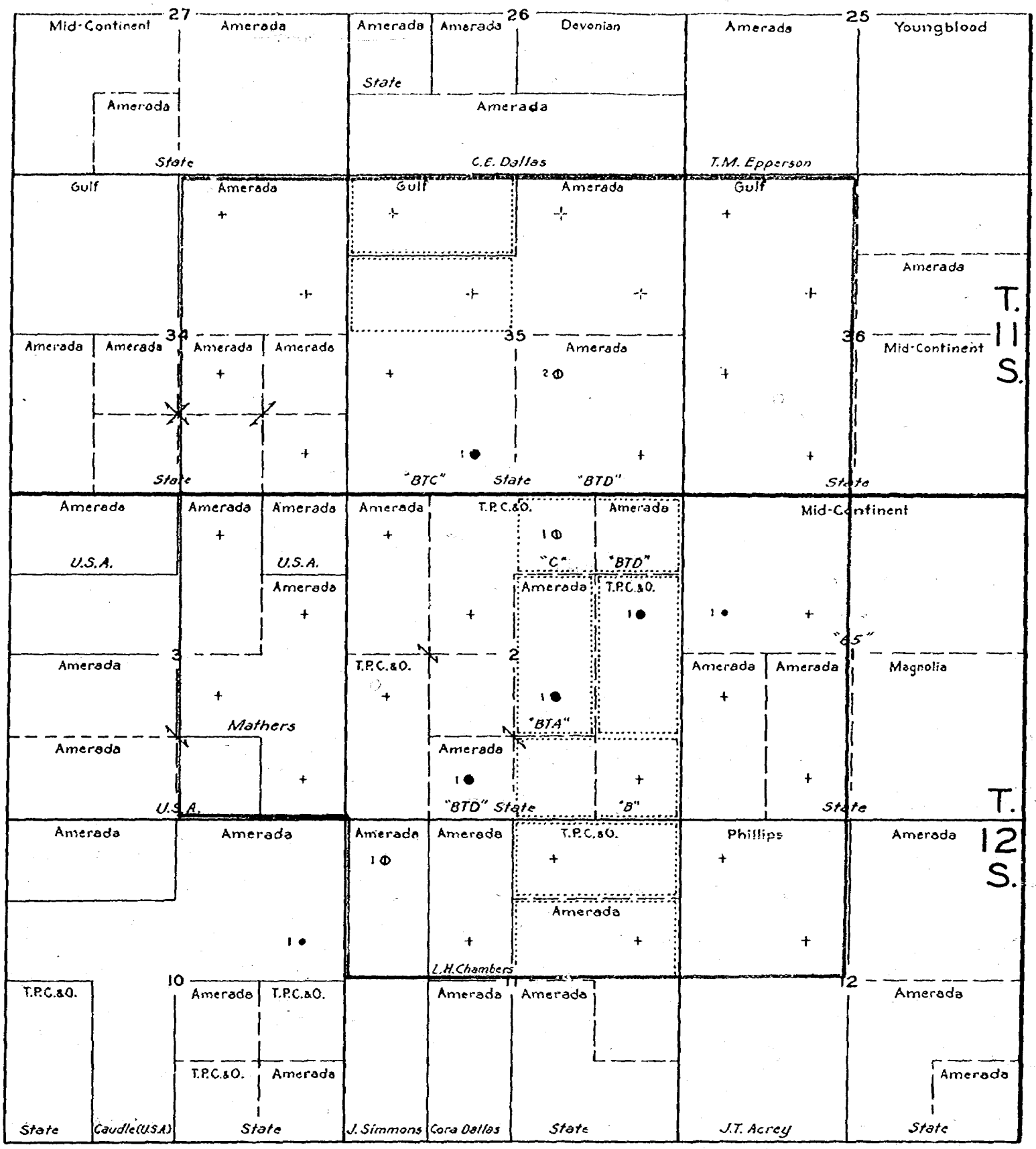
By J. O. Seth

Oliver Seth

Harry D. Page
Harry D. Page

Booth Kellough
Booth Kellough

Attorneys for
Amerada Petroleum Corporation



R.33 E.

BAGLEY FIELD

LEA COUNTY NEW MEXICO

● BAGLEY - SILURO-DEVONIAN POOL WELLS
• BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION
DECEMBER 20, 1949

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. 291
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

THOMAS J. MABRY, CHAIRMAN

Guy Shepard

GUY SHEPARD, MEMBER

R. R. Spurrier

R. R. SPURRIER, SECRETARY

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

In the matter of the application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼ Section 2, Twp. 12 S., Rge. 33 E., N.M.P.M., in Lea County, New Mexico.	)	Case No. 191

REQUESTED FINDINGS OF FACT AND CONCLUSIONS OF LAW
OF PROTESTANT TEXAS PACIFIC COAL AND OIL COMPANY

Comes now protestant Texas Pacific Coal and Oil Company by its attorneys and requests the Commission to adopt the following Findings of Fact and Conclusions of Law.

Findings of Fact

1. The lease owners in the Bagley Devonian pool here involved have not all agreed upon a plan for the spacing of wells.

2. None of the royalty owners, overriding royalty owners, or owners of production payments have agreed upon the plan proposed by applicant for spacing of wells in the pool here involved.

3. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant would have the effect of preventing "waste", as such term is defined by Senate Bill No. 163, Acts of the 19th Legislature, State of New Mexico, 1949.

4. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant is fair to the royalty owners in such pool.

5. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon the 80 acre fixed pattern spacing plan proposed by applicant would adequately and efficiently drain the recoverable oil from the pool reservoir.

6. The lease owners in the pool here involved have not all agreed upon the plan or method of distribution of the allowables, as proposed by applicant hereunder, nor have such lease owners all agreed upon the amount of the allowable per well proposed by applicant herein.

7. None of the royalty owners, overriding royalty owners, or owners of production payments, in the pool here involved, have agreed upon applicant's proposed plan or method of distribution of allowables, nor have such royalty owners agreed upon the per well allowable proposed by applicant.

8. The applicant failed to prove, by a preponderance of the evidence, that its proposed plan or method of distribution of allowables, or its proposed per well allowable, is fair to the royalty owners in such pool.

9. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon a 40 acre spacing pattern, in conformity with the existing Statewide spacing order, would constitute the drilling of unnecessary wells.

10. The applicant failed to prove, by a preponderance of the evidence, that applicant's proposed 80 acre fixed pattern spacing plan would afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil or gas in the pool.

11. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would reduce, or tend to reduce, the total quantity of crude petroleum oil and natural gas ultimately recoverable from the pool here involved.

12. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil and/or gas in the pool here involved.

13. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not properly protect the correlative rights of the lease owners and royalty owners in the pool here involved.

14. Applicant failed to prove, by a preponderance of the evidence, any basis or justification for granting its requested exceptions to the Statewide rules governing spacing of wells and assignment of allowables thereto, in the pool here involved.

Conclusions of Law

1. Granting of the application would result in "waste", as such term is defined in Senate Bill No. 163, Acts of the 19th Legislature of New Mexico, 1949.

2. Granting of the application would not properly protect the correlative rights of the owners in the pool.

3. Applicant's proposed allocation of a 40 acre allowable to an 80 acre proration unit results in unreasonable and discriminatory allocation between oil fields in this State.

4. Granting of the application and the establishment of the 80 acre proration unit and the fixed pattern spacing plan in the pool here involved would violate the provisions of Section 13 (c) of Senate Bill No. 163, Acts of the 19th Legislature, New Mexico, 1949, which provides that the owner of any tract that is smaller than the drilling unit established for the field shall not be deprived of the right to drill on and produce from such tract, if same can be done without waste.

Respectfully submitted,

Eugene T. Adair
Jack M. Campbell

By Jack M. Campbell
Attorneys for Protestant
Texas Pacific Coal and Oil Company

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-Silurio/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

THOMAS J. MABRY, CHAIRMAN

GUY SHEPARD, MEMBER

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

1201

SYMBOLS

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

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

1950 FEB 6 AM 8

K BRA260 DL PD=BARTLESVILLE OKLA 6 506P=

NEW MEXICO OIL CONSERVATION COMMISSION=

STATE CAPITOL BLDG SANTA FE NMEX=

RE AMERADA APPLICATION BAGLEY SILURIO DEVONIAN CASE 191=

PHILLIPS PETROLEUM COMPANY URGES THE COMMISSION TO GRANT AMERADA'S APPLICATION FOR RE-HEARING AND TO ESTABLISH EIGHT-ACRE PRORATION UNITS IN THIS POOL=

C P DIMIT VICE PRESIDENT PHILLIPS PETROLEUM CO=

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
RECEIVED
FEB 7 1950

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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

J. O. SETH
A. K. MONTGOMERY
OLIVER SETH
WM. FEDERICI

February 6, 1950

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
FEB 7 1950
RECEIVED

The Oil Conservation Commission
Santa Fe, New Mexico

Gentlemen:

Enclosed please find Application of Amerada Petroleum Corporation for Rehearing of Case No. 191, Order No. R-2, entitled:

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

The application is submitted in triplicate, and a supporting brief is likewise submitted in triplicate.

Phillips Petroleum Company, Gulf Oil Corporation, and Midcontinent Oil and Gas Company have already or will file their joinder in the Application for Rehearing.

A copy of the Application for Rehearing and of the Memorandum Brief have already been mailed to Mr. Adair, Attorney for the Texas-Pacific Coal and Oil Company, at Fort Worth.

Very truly yours,

JOS-mh

Encls.

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 supplement thereof for a period of One time ~~weeks~~

beginning with the issue dated December 7, 1949

and ending with the issue dated December 7, 1949

Robert L. Summers
Publisher.

Sworn and subscribed to before me this 8 day of December, 1949

Betty Jean
Notary Public.

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.

Dec. 7, 1949

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, of the following public hearing to be held December 20, 1949 beginning at 10:00 o'clock A. M. on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

STATE OF NEW MEXICO TO:

All named parties in the following case, and notice to the public:

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼ SE¼ Section 2, Township 12 South, Range 33 East, N. M. P. M., in Lea County, New Mexico. This is a readvertisement.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

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

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, of the following public hearings to be held September 8, 1949 beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4 NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

> Beginning at a point 660 feet west of the southeast corner of NE/4 NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico.

Case 192

In the matter of the application of Gulf Oil Corporation for an order authorizing dual completion and production from the Yeso formation (Drinkard pool) and from the Ellenburger formation (Bronson pool) from a single well bore in the Eunice King No. 17 Well, located 660 feet from the north line and 2310 feet from the west line (NE/4 NW/4) of Section 28, Township 21 South, Range 37 East, N.M.P.M., in Lea County, New Mexico.

Case 193

In the matter of the application of Shell Oil Company for a special exception from the provisions of Order No. 72 relating to central tank batteries with respect to State oil and gas leases E-1830, B-9446, B-7849 and E-276 under conditions existing in the West Wilson pool, Lea County, New Mexico.

Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office, to amend Section 3-A of Commission Order #784 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

> "When remedial work on a well has been completed by an operator to correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony

adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. Spurrier

R. R. SPURRIER, SECRETARY

EXHIBITS
Case No. 191

Texas-Pacific Coal & Oil Company

A.	Photostatic copy of letter	1 copy
B.	Photostatic copies of three leases	1 copy each
C.	Lease Ownership Plat	1 copy
D.	Mineral Fee Ownership Plat	1 copy
E.	Contour Datum - Top Glorieta	1 copy
F.	Contour - Top Pennsylvanian	1 copy
G.	Contour - Top Devonian to base of black shale	1 copy
H.	Schlumberger - St. B #1	1 copy
I.		
J.		
K.		
L.	Core graph	1 copy
M.	Core	1
N.	Core	1
O.	Overlay Contour Map - Top of Devonian	1 copy
P.	Well Cross Sections	1 copy
Q.	General Cross Sections	1 copy

Amerada Petroleum Corporation

1.	Red outlined map of Bagley area	3 copies
2.	Schlumberger - BTA #1	2 copies
3.	Schlumberger - BTC #1	1 copy
4.	Schlumberger - BTD #1	1 copy
	Property Map	6 copies

I. J. K. - Core graphs (missing)

CONTENTS
Case No. 191

Pan-American Coal & Oil Company

A.	Photostatic copy of letter	1 copy
B.	Photostatic copies of three leases	1 copy each
C.	Lease Ownership Plat	1 copy
D.	Mineral Fee Ownership Plat	1 copy
E.	Contour Datum - Top Glorieta	1 copy
F.	Contour - Top Pennsylvanian	1 copy
G.	Contour - Top Devonian to base of black shale	1 copy
H.	Schlumberger - St. B #1	1 copy
I.		
J.		
K.		
L.	Core graph	1 copy
M.	Core	1
N.	Core	1
O.	Overlay Contour Map - Top of Devonian	1 copy
P.	Well Cross Sections	1 copy
Q.	General Cross Sections	1 copy

Aranda Petroleum Corporation

1.	Red outlined map of Bagley area	3 copies
2.	Schlumberger - BTA #1	2 copies
3.	Schlumberger - BTC #1	1 copy
4.	Schlumberger - BTD #1	1 copy
	Property Map	6 copies

93717

Acme Coastal Prod. & Mining

A. Photostatic copy of Letter	1 copy
B. Photostatic copies of Plat Request	1 copy each
C. Lease Ownership Plat	1 copy
D. Mineral Fee Ownership Plat	1 copy
E. Contour Datum - Top Glorieta	1 copy
F. Contour - Top Pennsylvanian	1 copy
G. Contour - Top Devonian to base of black shale	1 copy
H. Schlumberger - St. N #1	1 copy
I.	
J.	
K.	
L. Core Graph	1 copy
M. Core	1
N. Core	1
O. Overlay Contour Map - Top of Devonian	1 copy
P. Roll Cross Sections	1 copy
Q. General Cross Sections	1 copy

Acme Petroleum Corporation

1. Pad outlined map of Bagley area	3 copies
2. Schlumberger - DFA #1	2 copies
3. Schlumberger - DFC #1	1 copy
4. Schlumberger - DFD #1	1 copy
Property Map	6 copies

37 Illegible

A. [illegible]

A. [illegible] copy of Section	1 copy
B. [illegible] copies of Cross Sections	1 copy each
C. Base [illegible] Plat	1 copy
D. Structure Contour Plat	1 copy
E. Contour Datum - Top Glorieta	1 copy
F. Contour - Top Pennsylvanian	1 copy
G. Contour - Top Devonian to base of black shale	1 copy
H. Schlumberger - St. R/A	1 copy
I.	
J.	
K.	
L. Core Graph	1 copy
M. Core	1
N. Core	1
O. Overlay Contour Map - Top of Devonian	1 copy
P. Oil Cross Sections	1 copy
Q. General Cross Sections	1 copy

Arenda Petroleum Corporation

1. Red outlined map of Bagley area	3 copies
2. Schlumberger - BRA #1	2 copies
3. Schlumberger - BRO #1	1 copy
4. Schlumberger - BRD #1	1 copy
Property Map	6 copies

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4. [illegible]	1 copy
5. [illegible]	1 copy
6. [illegible]	1 copy
7. [illegible]	1 copy
8. [illegible]	1 copy
9. [illegible]	1 copy
10. [illegible]	1 copy
11. [illegible]	1 copy
12.	
13.	
14.	
14. Corps Troops	1 copy
15. Corps	1
16.	1
17. Artillery Section Hq - Dep of Operations	1 copy
18. Air Force Section	1 copy
19. Armored Group Section	1 copy

Armored Artillery Organization

1. Tod artillery map of Region one	3 copies
2. Artillery - FA #1	2 copies
3. Artillery - FA #2	1 copy
4. Artillery - FA #3	1 copy
Spare copy Hq	4 copies

Case No.

191

Application, Transcript,
Small Exhibits, Etc.

ATWOOD, MALONE & CAMPBELL
LAWYERS

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

CHARLES F. MALONE

J.P. WHITE BUILDING
ROSWELL, NEW MEXICO

December 21, 1950

Case 191

Mr. George A. Graham,
Office of Commissioner of Public Lands
Santa Fe, New Mexico

Dear George:

Enclosed pleae find copy of pretrial order which has this date been signed by Judge Harris and forwarded to the Clerk of the Court in Lea County for filing.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

By: Jack M. Campbell

JMC:hl

Encl.

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

PROCEEDINGS

The following matter came on for consideration before a hearing of the Oil Conservation Commission of the State of New Mexico, pursuant to legal notice, at Santa Fe, New Mexico, on September 8, 1949, at 10:00 A. M.

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, of the following public hearings to be held September 8, 1949, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

> Beginning at a point 660 feet west of the southeast corner of NE/4NE/4 of section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

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Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office, to amend Section 3-A of Commission Order #784 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

> "When remedial work on a well has been completed by an operator to correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

By /s/ R. R. Spurrier
R. R. SPURRIER, Secretary

SEAL

BEFORE:

Hon. Guy Shepard, Chairman
Hon. R. R. Spurrier, Secretary

REGISTER:

M. B. Penn
Tulsa, Oklahoma
For Mid-Continent Petroleum Corporation

E. J. Pierce
Midland, Texas
For Mid-Continent Petroleum Corporation

J. P. Hammond
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Booth Kellough
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Roy O. Yarbrough
Hobbs, New Mexico
For the New Mexico Oil Conservation Commission

G. L. Shoemaker
Midland, Texas
For Stanolind Oil Purchasing Company

Frank R. Lovering
Hobbs, New Mexico
For Shell Oil Company

Paxton Howard
Midland, Texas
For Shell Oil Company

E. T. Adair
Fort Worth, Texas
For Texas Pacific Coal & Oil Company

R. G. Schuehle
Midland, Texas
For Texas Pacific Coal & Oil Company

Carl Barnhart
Midland, Texas
For Amerada Petroleum Corporation

R. S. Christie
Fort Worth, Texas
For Amerada Petroleum Corporation

J. W. House
Midland, Texas
For Humble Oil Company

Herman Pressler
Houston, Texas
For Humble Oil Company

Lloyd L. Gray
Tulsa, Oklahoma
For Gulf Oil Corporation

E. J. Gallagher
Hobbs, New Mexico
For Gulf Oil Corporation

C. D. Borland
Hobbs, New Mexico
For Gulf Oil Corporation

R. E. Canfield
Roswell, New Mexico
For the U. S. Geological Survey

Foster Morrell
Roswell, New Mexico
For the U. S. Geological Survey

Paul S. Johnston
Lubbock, Texas
For the Texas Tech. College

R. S. Blymn
Hobbs, New Mexico
For the Oil Conservation Commission

E. L. Shafer
Hobbs, New Mexico
For Continental Oil Company

I. H. Hinchfeld
Hobbs, New Mexico
For Lea County Operators

Elvis A. Utz
Santa Fe, New Mexico
For the Oil Conservation Commission

E. E. Kinney
Artesia, New Mexico
For New Mexico Bureau of Mines

E. C. Anderson
Socorro, New Mexico
For New Mexico Bureau of Mines

Dan McCormick
Carlsbad, New Mexico
For the Oil Conservation Commission

MR. SHEPARD: The meeting will please come to order. Mr. Graham, will you please read the first case.

(Mr. Graham read the notice of publication in Case No. 190.)

MR. KELLOUGH: May it please the Commission, I am attorney for Amerada. I don't know whether anybody is here to represent the Twin Oil Corporation or not. This application is an application to unitize a lease covering two acres owned

by a cemetery tract in a 40-acre tract in which Amerada owns the lease on the other thirty-eight acres. The agreement has been entered into between the Twin Oil Corporation and the Cemetery Association and Amerada. We are, however, still negotiating with some of our lessors, to ask their joining in this agreement. If there is no objection, we would like to ask this matter be continued for sixty or ninety days so that we may complete the settlement. The case as between the Twin Oil Corporation and the Cemetery Association has been settled, and we would like the matter just continued over until we can finally get it wound up.

MR. SHEPARD:: Is there anyone representing the Twin Oil Company or the Cemetery Association here? Does anyone have any objection to this being carried over? If not, it will be carried over until the next hearing. Would you want ninety days?

MR. KELLOUGH: That would be agreeable--thirty, or sixty or ninety.

MR. SHEPARD:: We will allow ninety days.

MR. KELLOUGH: That will be all right. We feel certain we will have it worked out in a few weeks.

MR. SHEPARD:: Read the next case, please.

(Mr. Graham reads the notice of publication in Case No. 191.)

MR. KELLOUGH: If the Commission please, I would like to make a statement for the record in connection with this matter. We came here yesterday prepared to present our evidence in this case with the understanding that all the operators were in agreement to our application. However, yesterday afternoon we were advised by the Texas Pacific Coal Company that they desired a continuance of this matter.

We have some properties which will be jointly owned in the 80-acre units if they are granted, and also the Texas Pacific Coal Company is now drilling a well located in the southeast of the northeast of Section 2, Township 12 South, Range 3W East, and they have requested that this matter be continued over until they complete their well. At the present time, it will be set down as soon as possible after the completion of their well. Their request is based upon the fact that additional information will be obtained from this well which is now drilling, and further that it will give us an opportunity to work out some arrangements with respect to these jointly owned leases. On behalf of Amerada, we have agreed to such a continuance with the understanding with Mr. Adair, the attorney for the Texas Pacific Company, that they will not seek any further continuance of this matter when it is set down as soon as possible after the well is completed and also with the understanding that any wells drilled in the meantime will not be located off of the pattern which Amerada has proposed in our application. Now, Mr. Adair, is that a correct statement?

MR. ADAIR: The well drilled by our company--I think possibly some other companies are involved--but any drilled by our company will conform to the proposed pattern.

MR. KELLOUGH: And you will not seek any further continuance after the matter is set down after the completion of this well?

MR. ADAIR: That is true.

MR. KELLOUGH: There are other operators interested in the area, and I wish to state to the Commission at this time

that it is possible that we now have sufficient evidence for 80-acre units in this field, and that we are not agreeing to the continuance with any hesitancy on our part that we do not have sufficient evidence, but because of the request of the Texas Pacific Coal Company, if there are any other operators here in the area, why then, of course, personally, I think I would welcome any statement they have to make as to their attitude on the continuance in this matter.

MR. SHEPARD: How long a continuance do you want?

MR. KELLOUGH: I don't believe a definite time can be specified. Mr. Adair advises me he believes their well can be completed in approximately ninety days. Rather than set it down--it may be completed sooner. I don't know how they are getting along with the drilling. I believe they are down around seven or eight thousand feet, but we would be most anxious to advise the Commission immediately upon the completion of the well to have the matter set down as soon as possible, because we are urging it very strongly, and we don't want to be delayed any more than we possibly can.

MR. SHEPARD: Any objections? If not, it will be continued indefinitely until you ask for it. Case 192.

(Mr. Graham reads notice of publication in Case 192.)

MR. GRAY: We would like to ask for a continuance in that case also. At the present time, we have a well completed as an Ellenburger Well. There is some indication it may be making a little bit of water. We would like to observe it a longer period of time before we put on testimony since we may want to withdraw the application.

MR. SHEPARD: Can we set that down for the first of November?

MR. GRAY: Yes, I think that will be all right.

MR. SHEPARD: If there is no objection, it will be continued until the first of November hearing. Case No. 193.

(Mr. Graham reads the notice of publication in Case No. 193.)

MR. HOWARD: Paxton Howard and Frank Lovering for the Shell Oil Company. We ask that Mr. Lovering be sworn.

(Witness sworn.)

FRANK R. LOVERING, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. HOWARD:

Q. State your name, please.

A. Frank R. Lovering.

Q. You live at Hobbs, New Mexico?

A. Yes, sir.

Q. And are employed by the Shell Oil Company, Inc.?

A. That's right.

Q. In what capacity?

A. Superintendent.

Q. In your capacity as superintendent you have jurisdiction of and are familiar with the field designated as the West Wilson Field, Lea County, New Mexico?

A. I do.

Q. You are familiar with the contents of the application filed for this hearing?

A. I am.

Q. I will hand you--will you identify--and please mark this as Exhibit A--please identify this.

A. This is a plan showing--Exhibit A is a plat showing the development to date in the West Wilson pool.

Q. It was prepared under your supervision?

A. That's right.

MR. HOWARD: I ask that it be admitted, please.

MR. SHEPARD:: It will be admitted.

Q. Now, Mr. Lovering, will you point out to the Commission the Shell leases that are involved in this application.

A. In this particular application the leases involved are stated in the application, State Nos. E-1830, B-7849, B-9446, E-276. For purposes of well nomenclature we have designated them as our Shell State Leases A, B, C, and D.

Q. Those leases are all owned by Shell Oil Company, Inc.?

A. That's right.

Q. They are all state leases?

A. That's right.

Q. Now, will you state to the Commission the history of the development in the West Wilson pool, please.

A. We are confronted here with a very unusual problem, as noted on this plat, the territory involved here is surrounded by four dry holes by the Vickers Petroleum up on the northwest corner of the plat, Davidson and Clower in the western portion, Cities Service well which was recently completed as a dry hole up in Section 16, and J. W. Brown with a similar well in Section 22. Further than that the J. C. Clower well No. 2 and the Shell State A-2 in the southeast quarter of Section 16 are very weak wells and determine the eastern limits of the field. So that at the present time the center of the possible development there centers around four or five leases there, and it is indicated that production will probably be limited to about one well per lease. There is no room to the north. The

eastern limits are already defined, and it looks like about a six-well field.

Q. Mr. Lovering, what was the discovery well?

A. It was the J. C. Clower No. 1.

Q. When was the discovery?

A. About a year ago.

Q. In what formation?

A. The formation is reef-type bump, drilled at a depth of about 3960 immediately below the Yates formation.

Q. And it is your belief from the present indications that each of the leases involved in this application will probably be limited to one well, is that correct?

A. That is correct. The only exception to that would be to while there may be a possible extension southward, but the indications of the well drilled on State B-1 is that the pay is pinching out, and the development southward is only problematical. The pay is only about eleven to fourteen feet in thickness which overlies a water strata, and production is rather limited. All wells were brought in under the pump rather than open flow.

Q. In the present application you ask to be relieved from the necessity of having a separate tank battery on each lease and ask permission to use a central tank battery for all State leases?

A. That's right.

Q. At the present time, what type of battery facilities do you have in contemplation?

A. At the present time, we have two high 500-barrel tanks and one separator. We are at the present time installing heating and treating facilities which will include a 750-

gun barrel and a jug-type water heater. We anticipate if our petition is accepted that we will add another 500-barrel tank to the battery, one additional separator which will permit us to test any of the possible five wells that may be turned into that battery. We will be able to test them at any time at the pleasure of the Commission or any other authority.

Q. The tank battery is on Shell A as shown in the plat?

A. Directly between wells 1 and 2.

Q. And what is the estimated cost of the installation of this tank battery?

A. Between sixteen and eighteen thousand dollars. It has been generally--we like to carry at least four and a half tank production in our batteries. And it has been, and it generally runs between five and six dollars a barrel exclusive of heating, treating, and settling facilities.

Q. Now, to construct separate tank batteries on each of the leases, do you have an estimate as to what the cost would be as to each lease?

A. With heating and treating facilities it would run around $12,000.00, to state a rough estimate.

Q.. Yes, sir, that's right.

A. The engineers gave us a figure here, I believe.

Q. Well, it is stated in the application, and in your opinion that cost as regards each of these separate leases would be for the sole purpose of taking care of what at this time appears to be just one well?

Q. By asking the central tank battery, there can be saved the cost of these separate installations and in

addition to that the central tank battery can be equipped so that separate tests can be taken on all of those wells?

A. That's right.

Q. In your opinion will the granting of this application in any manner aid in conservation and prevention of the waste of natural resources?

A. It will.

Q. In what manner?

A. In reduced further maintenance cost and operational cost. It will reduce operational cost in the neighborhood of 60 per cent. It will cut down maintenance cost tremendously, just the difference between one tank battery and four or five.

Q. And that matter will prolong the economic life of the various leases?

A. It will make it possible to continue producing those wells for a longer period of time due to the reduced operating and maintenance cost.

Q. All the royalty is the same, owned by the State?

A. That is correct.

Q. Do you have anything else to add?

A. No, I would be glad to answer any questions.

MR. HOWARD: Does the Commission have any questions?

MR. McCORMICK: How about overriding royalties or oil payments?

A. None that I know of.

MR. McCORMICK: None on the other leases?

A. We were informed the royalties were all the same.

MR. HOWARD: That is [illegible] information that the royalties were all the same.

MR. GRAHAM: Does your information disclose the institutional ownership of all the four leases? Is it the same institution? Do they all belong to the schools?

MR. HOWARD: Yes, sir.

MR. McCORMICK: Do you have the leases with you, Mr. Howard?

MR. HOWARD: No, sir, I do not.

MR. McCORMICK: What system will you have for actually measuring the oil produced from each separate lease?

A. The facilities will be there to make periodic tests of at least two wells at a time, weekly, monthly, which we normally do anyway, and it would be no different than any other battery with the same facilities.

MR. McCORMICK: How do you know exactly how much oil each well produces each month during a proration period?

A. We never know exactly any more than we know on any two wells in the State of New Mexico. That is our general practice; it is based on period production. We can make those at the rule of the Commission, or at any specific interval, or at any time you wish for that matter.

MR. McCORMICK: This testing device you will have to test the production, it can be run for any period?

A. Any predetermined period, that is right.

MR. HOWARD: Whatever tests the Commission requires, we are ready to make. We do have a peculiar problem, and it looks like it will be a very small field. They are all leases with a common royalty.

MR. SHEPARD: Any objections? Does anyone have anything to say? If not, then it will be granted.

MR. HOWARD: Thank you.

MR. SHEPARD: Case 194.

(Mr. Graham reads the notice of publication in Case No. 194.)

MR. SHEPARD: Mr. Staley, do you have anything to offer on this?

MR. STALEY: Under the present Commission the changing of allowable between the first of one proration period until the beginning of the next proration period on any new allowable--I mean new wells--are given an allowable. That is, during the opening and closing of any proration period; from time to time the operators have done remedial work and been able to correct for high gas-oil ratio on wells in fields having limited ratios, but it has been necessary to wait until the beginning of the next proration period before assigning an allowable to that well; that is, a new allowable based on the new gas-oil ratio tested after the remedial work is completed. Therefore, the Commission was requested to make a ruling regarding the placing of high gas-oil ratios--that is, giving a new allowable to a well that is penalized under the present system.

MR. SHEPARD: Mr. Morrell, do you have anything to say on this?

MR. MORRELL: I see no objection to it.

MR. SHEPARD: Any other objections? Anyone have anything to say? If not, it will be granted. There being no further business, we will stand adjourned.

STATE OF NEW MEXICO)
: SS
COUNTY OF BERNALILLO)

I HEREBY CERTIFY That the foregoing transcript of proceedings before the Oil Conservation Commission is a true record of the matters therein set forth.

DONE at Santa Fe, New Mexico, this 20th day of September, 1949.

E. E. Greeson

E. E. GREESON
Notary Public

My Commission Expires 8-4-52.

FIFTH JUDICIAL DISTRICT COURT

STATE OF NEW MEXICO

ROSWELL, NEW MEXICO

August 4, 1950

Messrs. Hervey, Dow and Hinkle
Attorneys at Law
Roswell, New Mexico

Messrs. Atwood, Malone and Campbell
Attorneys at Law
Roswell, New Mexico

Re: In the matter of the petition of Amerada Petroleum Corporation for review and appeal of proceedings before the Oil Conservation Commission of the State of New Mexico in case No. 191; No. 8485, Lea County.

Gentlemen:

Having given further consideration to the legal questions raised at the inception of the pre-trian conference on the above captioned matter on May 29, 1950, and after an examination and study of the briefs filed herein, you are advised that my conclusions as to the questions contained in paragraphs Nos. 1 and 4 of the notice of pre-trial conference, dated May 5, 1950, are, and upon a resumption of the pre-trial conference will be incorporated in the record as follows:-

1. That the Oil Conservation Commission of New Mexico is primarily an administrative body with certain delegated legislative powers; and that in entering the order complained of in the Petition for Review the Commission was acting in that capacity.

2. That this Court is without power to substitute its own independent judgment for that of the Commission as reflected in the Order complained of.

3. That the nature and scope of the review in this case will 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.

4. A transcript of the proceeding before the Commission including the evidence taken in a hearing or hearings by the Commission shall be received in evidence by the Court in whole or in part upon offer by either party, subject to legal objections to evidence.

5. Evidence in addition to that contained in the transcript of the proceedings before the Commission will be limited to
(a) such matters as to which legal objections are made and sustained to evidence thereon appearing in the transcript of the proceedings before the Commission; and
(b) facts bearing upon the question of whether or not the Order of the Commission was arbitrary, capricious or unreasonable, or whether the Commission acted beyond its power.

With reference to sub-paragraph (a) of paragraph 3 above set forth and in order that there may be no confusion or misunderstanding as to the meaning of said sub-paragraph, you are specifically informed that the Court does not look with favor upon the proposition urged under point "V" of Petitioner's brief filed with the Court, and that the Court will not permit the introduction of evidence based upon the proposition that the action of the Commission with reference to the application under consideration by it was one of jurisdiction or power but that it was an action involving the exercise of discretion and judgment only,

You are further advised the pre-trial conference will be resumed at Roswell, New Mexico, on September 11, 1950 at 1:30 o'clock P.M. upon the remaining matters set forth in the Order dated May 5, 1950.

Yours very truly

/s/ Geo. Harris

COPY

GEORGE L. REESE, JR.
ERNEST G. McCORMICK
S. M. RUTHERFORD, III

REESE AND McCORMICK
ATTORNEYS AT LAW
FIRST NATIONAL BANK BUILDING
CARLSBAD, NEW MEXICO

September 9, 1950

Honorable George T. Harris
District Judge
Roswell, New Mexico

Re: Amerada Petroleum Corporation,
Case No. 8485, District Court
of Lea County.

Dear Judge Harris:

I have received notice that the pre-trial conference in the above case will be resumed at Roswell on 11 September, 1950, at 1:30 p.m. I had planned to attend this hearing, but it now develops a meeting of the Eddy County Bar Association has been called for Noon of that same day in Carlsbad. I happen to be president of this association, and the meeting is important in that we are now making the final plans for the annual meeting of the State Bar of New Mexico. Therefore, I regret that I shall be unable to attend.

I have been informed by both Mr. Hinkle and Mr. Campbell that Amerada Petroleum Corporation will move to dismiss this matter without prejudice, and that the intervener, Texas Pacific Coal & Oil Company, will resist this motion and urge that any dismissal should be with prejudice.

I have given this matter some thought and have read a little law on the subject. Under the state of the record, it does not appear to me that it is of great importance to the Oil Conservation Commission which course is taken. You will recall that the order of the Commission which is being reviewed merely held that there was insufficient evidence to justify the establishing of eighty acre proration units in the Bagley-Siluro-Devonia Pool. Therefore, if the case were dismissed with prejudice, it would merely mean that Amerada was bound by the decision, that as of 20 December, 1949, the date of the hearing before the Commission, there was insufficient evidence to justify

the spacing order which was sought. On the other hand, if the case were dismissed without prejudice, the question of whether or not there was sufficient evidence on 20 December, 1949, would not be res adjudicata.

In the event Amerada should later file another petition seeking an eighty acre spacing order, the Commission would be bound to determine all new evidence based on facts developed since 20 December, 1949. In order to do this, they would necessarily have to consider the facts which had been developed up to 20 December, 1949, in order to correlate all the pertinent facts. The law specifically allows Amerada to file a new petition based on changed conditions. Therefore, I do not see that it will make any difference, one way or the other, as to whether the case is dismissed with or without prejudice.

I recognize that counsel for Texas Pacific Coal & Oil Company have borne the brunt of the work in this case, and I trust you will give due consideration to the views of those attorneys. I am merely expressing my own views as attorney for the Oil Conservation Commission and do not desire to prejudice the position of Texas Pacific Coal & Oil Company.

Very truly yours,

Don G. McCormick

CC: Hon. Jack M. Campbell
Attorney at Law
J. P. White Building
Roswell, New Mexico

Hon. Clarence E. Hinkle
Attorney at Law
J. P. White Building
Roswell, New Mexico

Mr. R. R. Spurrier
State Geologist
Santa Fe, New Mexico

DGM:mjt

October 27, 1950

COPY

Atwood, Malone and Campbell
Attorneys at Law
Box 867
Roswell, New Mexico

Attention: Mr. Jack M. Campbell

Gentlemen:

I want to acknowledge receipt of a copy of proposed Pre Trial Order in Case No. 8485 in the Fifth Judicial District Court, the same being the Amerada appeal in the Oil Conservation Commission Case No. 191.

I have read the copy carefully and I am of the opinion that the Order is agreeable in all respects except the following indicated typographical errors:

On line 16 you have "George L. Graham" which should be "George A. Graham."

On line 12 of paragraph 2 on page 2 the same correction would please me.

My middle initial is "A" as in"Aloysius"

In the last line of Page 6 the word "contril" should be "control."

I think the draft of the proposed order is well stated.

Very truly yours,

GEORGE A. GRAHAM, Attorney
State Land Office

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191	))))))	CASE NO. 8485

Denied

MOTION FOR DISMISSAL

COMES the Amerada Petroleum Corporation, Petitioner in the above styled cause, acting by and through its Attorneys of Record and moves the Court to dismiss said cause without prejudice at Petitioner's Costs and in support of such motion respectfully shows:

1. This is an appeal from an order entered by the New Mexico Oil Conservation Commission after hearing before the Commission on December 20, 1949, denying the application of the Amerada Petroleum Corporation to establish proration units and uniform spacing of wells in the "Bagley-Siluro-Devonian Pool" in Lea County, New Mexico.

2. That the discovery well in the Bagley Pool or Field was completed on or about June 16, 1949 and that the evidence introduced at the hearing before the Conservation Commission consisted largely of the opinions of experts based upon analysis of drilling information of wells which had been drilled in said field up to the time of said hearing and reasonable inferences or conclusions to be drawn from such information.

3. That the Amerada Petroleum Corporation is willing to abide by the order of the Conservation Commission but believe that it should not be precluded by the dismissal of this cause with prejudice from again requesting the Conservation Commission

to review this matter in the event it should be demonstrated some time in the future by the actual production record of said field that it is for the best interests of all concerned and the State of New Mexico that said field be developed on some basis other then normal 40 acre spacing.

Respectfully submitted,

Harry D. Page

Booth Kellough
Tulsa, Oklahoma

HERVEY, DOW & HINKLE

By
Roswell, New Mexico

Attorneys for Petitioner
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 THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTA NO. 1 WELL, NW/4 SE/4 SEC. 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO.

CAUSE NO. _____

ORDER NO. _____

A P P L I C A T I O N

COMES, NOW, Amerada Petroleum Corporation, Tulsa, Oklahoma, and alleges and states:

1. That applicant has drilled and completed a well known as "State BTA No. 1" located in the center of the NW/4 SE/4 Sec. 2-12S-33E, Lea County, New Mexico, and discovered a new common source of supply found in said well at the approximate depth of from 10,770 feet to 11,000 feet, the probable productive limits of said common source of supply to be determined by the Commission.

2. That in addition to the discovery well referred to above, the following wells are now being drilled to said common source of supply in the area:

(a) Amerada-State BTC No. 1, located in SE/4 SW/4 Sec. 35-11S-33E;

(b) Texas, Pacific Coal and Oil Company No. 1, State "B"-Account No. 1, located in SE/4 NW/4 Sec. 2-12S-33E;

(c) Mid-Continent Petroleum Corporation No. 1, State Land 65, located in SW/4 NW/4 Sec. 1-12S-33E;

3. That in addition to the above described wells the following wells have also been drilled, or are now drilling in the area:

(a) Amerada No. 1 Caudle, located in the SE/4 NE/4 Sec. 10-12S-33E, which tested salt water in the same stratigraphic horizon that is producing oil in the discovery well described above, and has been completed as an oil well in a shallower formation;

(b) Amerada-State BTB No. 1, located in NW/4 NW/4 Sec. 26-12S-33E, which tested oil in a formation that may be the same common source of supply in which the above described discovery well has been completed;

4. A plat of the area showing the location of the wells referred to above is attached hereto and marked "EXHIBIT A".

5. That in order to bring about the orderly and proper development of said common source of supply, prevent waste and to avoid the drilling of unnecessary wells, and to secure the greatest ultimate recovery therefrom, and to protect the correlative rights of the interested parties therein, it is necessary and proper for the Commission to enter its order providing for proration units of 80 acres each, such being the area which may be efficiently and economically drained by one well, and to provide for the uniform spacing of said wells in the center of the Northwest and Southeast forty-acre tracts of each quarter section, with a tolerance of 150 feet to avoid surface obstructions.

6. That the well now being drilled to said common source of supply known as "Mid-Continent Petroleum Corporation No. 1, State Land 65," located in SW/4 NW/4 Sec. 1-12S-33E, should be granted an exception to the spacing order established by the Commission hereunder and be considered as the well for the proration unit on which it is located.

WHEREFORE, applicant respectfully requests that the Commission set this application for public hearing at the time and place to be fixed by the Commission, that due and proper notice be given as required by law, and that at the conclusion of said hearing the Commission make and enter an order determining and defining the probable productive limits of the common source of supply referred to above, naming the pool, establish proration units of 80 acres each, and provide for a uniform spacing of such wells, designating the location of said wells

in the center of the Northwest and Southeast forty-acre tracts of each quarter section with a tolerance of 150 feet in any direction from said prescribed location to avoid surface obstructions, and to provide for exceptions in the case of the well now being drilled to said common source of supply known as the "Mid-Continent Petroleum Corporation No. 1, State Land 65", described above.

DATED this 29th day of July, 1949.

Harry D. Page
Harry D. Page

Booth Kellough
Booth Kellough

Attorneys for,
Amerada Petroleum Corporation.

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

ATWOOD, MALONE & CAMPBELL
LAWYERS

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

October 12, 1950

RECEIVED
STATE LAND OFFICE
OCT 16 10 47 AM '50
SANTA FE, N. M.

Mr. George Graham , Attorney
Commissioner Public Lands
Santa Fe, New Mexico

RE: In the Matter of the
Petition of Amerada
Petroleum Corporation

Dear George:

Enclosed please find copy of proposed Pre-Trial Order for your approval as to form or suggestion as to changes. We consider it better to send copies of the proposed order at this time and when we have all agreed then to circulate the original for initialing.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

By: Jack M. Campbell

JMC:hl
Encl.

RECEIVED
STATE LAND OFFICE
Oct 16 10 47 AM '50
SANTA FE, N. M.

IN THE DISTRICT COURT OF LEA COUNTY

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR AN ORDER REVISING AN ORDER ENTERED BY THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191	)	Case No. 2155.

PRETRIAL ORDER

This matter having come on for hearing at pretrial conference at 9:00 a.m. on May 29, 1950 in the Court Chambers at the Courthouse of Roswell, New Mexico, pursuant to the provisions of Rule 16 of the Rules of the District Courts of the State of New Mexico, upon notices duly given to all parties, it was stipulated in open Court that said pretrial conference would be held before the Court at Roswell, New Mexico, in lieu of the conference being held in Lea County, New Mexico. Petitioner Amerada Petroleum Corporation was represented by Clarence E. Hinkle for Hervey, Dow & Hinkle, Roswell, New Mexico, and Booth Kellough of Tulsa, Oklahoma, its attorneys of record. Respondent Texas Pacific Coal & Oil Company was represented by Jack M. Campbell and Ross L. Malone, Jr. for Atwood, Malone & Campbell, Roswell, New Mexico, and Eugene T. Adair, Fort Worth, Texas, its attorneys of record. Respondent Oil Conservation Commission of New Mexico was represented by Dan G. McCormick, Special Assistant Attorney General and George A. Graham Special Assistant Attorney General, two of its attorneys of record. The following proceedings were had:

1. Respondent Texas Pacific Coal & Oil Company, joined by Respondent Oil Conservation Commission of New Mexico, under paragraphs numbered 1 and 4 in the Notice of Pretrial conference

raised the question of the extent of the scope of the review by the Court of the order appealed from and presented argument that the Court in its review was limited to a determination of whether there was substantial evidence in the record before the commission to sustain its order. Petitioner requested additional time to submit a brief to the Court upon the question and pursuant to such request the pretrial conference was recessed pending furnishing of briefs by the parties and a determination by the Court as to the question raised.

2. Briefs having been submitted pursuant to instruction by the Court, the pretrial conference was resumed at Roswell, New Mexico, on September 11, 1950 at 1:30 p.m. due notice having been given to all parties. Petitioner Amerada Petroleum Corporation was represented by Clarence E. Hinkle for Hervey, Dow & Hinkle, Roswell, New Mexico, and Booth Kellough of Tulsa, Oklahoma, its attorneys of record. Respondent Texas Pacific Coal & Oil Company was represented by Jack M. Campbell and Ross L. Malone, Jr. for Atwood, Malone & Campbell, Roswell, New Mexico, and Eugene T. Adair, Fort Worth, Texas, its attorneys of record. Respondent Oil Conservation Commission of New Mexico was represented by George A. Graham, Special Assistant Attorney General, one of its attorneys of record.

3. The Court having considered the briefs submitted by the parties and having heard argument of counsel as to the scope and extent of the review by the Court of the order of the Oil Conservation Commission in accordance with its letter to counsel dated August 4, 1950, ordered:

> 1. That the Oil Conservation Commission of New Mexico is primarily an administrative body with certain delegated legislative powers; and that in entering the order complained of in the Petition for Review the Commission was acting in that capacity.

2. That this Court is without power to substitute its own independent judgment for that of the Commission as reflected in the Order complained of.

3. That the nature and scope of the review in this case will 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.

4. A transcript of the proceeding before the Commission including the evidence taken in a hearing or hearings by the Commission shall be received in evidence by the Court in whole or in part upon offer by either party, subject to legal objections to evidence.

5. Evidence in addition to that contained in the transcript of the proceeding before the Commission will be limited to (a) such matters as to which legal objections are made and sustained to evidence thereon appearing in the transcript of the proceedings before the Commission; and (b) facts bearing upon the question of whether or not the Order of the Commission was arbitrary, capricious or unreasonable, or whether the Commission acted beyond its power.

6. With reference to sub-paragraph (a) of paragraph No. 3 above set forth and in order that there may be no confusion or misunderstanding as to the meaning of said sub-paragraph, you are specifically informed that the Court does not look with favor upon the proposition urged under point "V" of Petitioner's memorandum brief filed with the Court, being the contention that the ultimate fact was a jurisdictional one which could be heard de novo, and that the Court will not permit the introduction of evidence based upon the proposition that the action of the Commission with reference to the application under consideration by it was one of jurisdiction or power but that it was an action involving the exercise of discretion and judgment only.

4. Petitioner Amerada Petroleum Corporation excepted to all of the aforesaid order and Respondent Texas Pacific Coal & Oil Company excepted to that portion of the order which provided that the evidence taken in a hearing before the commission was subject to legal objections before the Court and that additional

evidence might be heard upon such matters as to which legal objections are made. Petitioner Amerada Petroleum Corporation then by written motion moved the Court to dismiss its appeal without prejudice and the Court having heard argument of counsel and having fully considered the matter announced that it would dismiss the case with prejudice but deny the motion to dismiss without prejudice, whereupon counsel for Petitioner stated that it would proceed with the trial of the matter unless a dismissal without prejudice were granted. The Court announced it would enter its order denying the motion to dismiss without prejudice.

5. It was agreed by all parties that subject to the exceptions hereinafter noted the transcript of testimony and the exhibits attached thereto at the hearing before the Oil Conservation Commission would be received in evidence without objection. The following exceptions were agreed upon.

(a) It was agreed and stipulated between the parties that Respondent Texas Pacific Coal & Oil Company's Exhibit "E" and all testimony relating thereto would not be considered by the Court.

(b) It was further agreed and stipulated between the parties that Respondent Texas Pacific Coal & Oil Company's Exhibit "F" and testimony relating thereto would be considered by the Court only to the extent that such exhibit and testimony might tend to prove the impracticability and lack of feasibility of such pooling as might be required under the order sought by Petitioner.

(c) It was further agreed and stipulated between the parties that a schedule of mineral, leasehold, and royalty ownership under leases of Petitioner Amerada Petroleum Corporation could be included and made a part of the transcript of record to

be considered by the Court as showing such mineral, leasehold and royalty owners in as reflected by the files of Amerada Petroleum Corporation or the dates shown in the schedules.

6. It was further agreed and stipulated between the parties that Petitioner Amerada Petroleum Corporation could prepare a written motion by which it might tender proof setting out such matters as authorized under the Rules of Civil Procedure if the matter were tried in open Court, specifically identifying witnesses and the matters concerning which they would testify, the motion to be submitted to counsel for Respondents Texas Pacific Coal & Oil Company and Oil Conservation Commission of New Mexico before filing for approval with the Court.

7. Respondent Oil Conservation Commission of New Mexico with approval of the Court and without objection filed a copy of the transcript of testimony before the Oil Conservation Commission, including all exhibits, as a part of its answer to the petition. It was stipulated and agreed between the parties that copies of the records before the Commission might be used and considered by the Court in lieu of original records.

8. Respondent Texas Pacific Coal & Oil Company objected to paragraph 6 (d) of the petition on the ground that the assignment of error was too general in its nature to be considered by the Court. Petitioner agreed to delete this paragraph with the understanding that it would not prejudice petitioner's right to raise jurisdictional questions and the Court so ordered.

9. It was stipulated and agreed that the following typographical errors in the transcript would be corrected and considered by the Court as corrected:

(1.) At page 29 of the transcript on the thirteenth line from the top of said page commencing with the semicolon

the clause should read "the royalty owner vents" etc.

(2) At page 41 of the transcript in the fifteenth line from the top of said page the word "prove" should be changed to the word "pool".

(3) At page 53 of the transcript in the first line thereof the word "flat" should be changed to the word "flank".

10. It was further agreed and stipulated between the parties that under the rulings of the Court the only question for determination by the Court upon a trial of this cause was whether there was substatntial evidence in the record before the Court to sustain the order of the commission.

This order is entered pursuant to and in compliance with Rule 16 of pretrial procedure of the rules of civil procedure of the District Courts of the State of New Mexico and will contril the subsequent course of this action.

_____
District Judge

Done this _____day of _____, 1950.

TEXAS PACIFIC COAL & OIL COMPANY

MEMORANDUM BRIEF

THE NATURE AND SCOPE OF THE REVIEW BY THE DISTRICT COURT OF AN ORDER OF THE OIL CONSERVATION COMMISSION INCLUDING THE QUESTION OF WHAT EVIDENCE MAY BE PRESENTED UPON APPEAL.

This case represents the first appeal ever taken in the State of New Mexico from an order of the Oil Conservation Commission. It is taken under the provisions of the oil and gas conservation law of this State which was enacted in 1935 and which was re-enacted by the 1949 legislature with certain amendments. Included in the amendments was one which changed the appeal and review sections under which this appeal is taken.

At the outset it would seem proper to state specifically the position of the Texas Pacific Coal and Oil Company in this case and its attitude concerning the power of the District Court to review matters decided by the Commission, including the nature of the evidence which may properly be heard by this Court.

The original application herein was filled by Amerada Petroleum Corporation and in its application it requested that it be granted an exception from the state-wide rules concerning the spacing of oil and gas wells. The general spacing program in New Mexico has for a number of years been upon a forty acre basis, and deviations from that spacing pattern have been granted from time to time upon application for an exception to the rule. It is of some significance to note that heretofore exceptions have been requested for spacing patterns for less than forty acres, but this appears to be the first instance in this

State in which application has been made for an exception requesting a spacing pattern for more than forty acres. It should be noted in passing that Amerada is not being forced by Commission or anyone else to drill on 40 acre locations. Texas Pacific Coal and Oil Company is the owner of certain leases in the field here involved, and it entered the hearing before the Commission protesting the granting of the exception to the state-wide rule. The Commission, after hearing the evidence, denied the application for the exception, by its order No. R-3, in which it found in effect that the evidence submitted by the applicant was insufficient to prove what the Commission considered to be necessary matters of proof for the granting of an exception to the state-wide rule. The applicant then filed its petition for rehearing setting out the respects in which it considered the Commission in error, as required by the statute, and upon the denial of the motion for rehearing it takes this appeal to the Court, in which appeal, under the statute, it is limited to the same questions which were presented to the Commission in its application for rehearing. There is no constitutional question presented in the Petition for Review.

The first matter which Texas Pacific Coal and Oil Company would like to call to the attention of the Court, with the request that it be determined at this time, is the nature and extent of the review of the Commission's order which may be obtained before this Court. We consider this proposition fundamental, both from a substantive and a procedural point of view. It is a proposition which we raise at the outset, in order to avoid the possibility of delay in the disposition of this matter by the introduction of evidence and the inevitable objection to its admissibility. It is our position that the so-called "de novo" provisions in the New Mexico appeal statute violate the Constitution

of the State of New Mexico, and that this Court, if review is to be granted, is limited upon review to the transcript of evidence before the Conservation Commission and only such other evidence as may bear upon the power of the Commission to act. It is our further position that this Court can only inquire into whether or not the decision of the Commission is supported by substantial evidence, or is arbitrary or capricious, or beyond the power of the Commission to make, or violates some constitutional right of the appellant.

Applicable Constitutional and Statutory Provisions

In order that the Court may bear in mind through this argument the basis of the position of the Texas Pacific Coal and Oil Company, we wish to call to the attention of the Court the constitutional and statutory provisions to which we will make reference and which we consider pertinent to this matter.

As has heretofore been stated, the Oil Conservation Commission was created and its power defined by the re-enactment of the 1935 Statute by the 1949 Legislature, which Statute now appears at Chapter 69 of the 1949 Accumulative Pocket Supplement of the New Mexico Statutes 1941 Annotated. Section 69-210 of that Act defines the general powers of the Commission as follows:

> "The commission is hereby empowered, and it is its duty, to prevent the waste prohibited by this act and to protect correlative rights, as in this act provided. To that end, the commission is empowered to make and enforce rules, regulations and orders, and to do whatever may be reasonably necessary to carry out the purposes of this act, whether or not indicated or specified in any section hereof."

Section 69-211 enumerates certain specific powers of the Commission, including the one which is pertinent to this case by stating:

> "Apart from any authority, express or implied, elsewhere given to or existing in the commission by

> virtue of this act or the statute of this state, the commission is hereby authorized to make rules, regulations and orders for the purposes and with respect to the subject matter stated herein, viz:
>
> . . . . . .
>
> "(10) To fix the spacing of wells;
>
> . . . . . .

It should be apparent that the Legislature has delegated to the Oil Conservation Commission wide powers to deal with matters involving the production of oil and gas in this State, and that such powers are legislative powers which could be exercised by the Legislature itself or through committees, except for the fact that the Legislature obviously considered it more practical to delegate these powers to an administrative body composed of the Governor of the State, the Commissioner of Public Lands and the State Geologist, as a member and director. In connection with this legislative power invested in the Oil Conservation Commission, the provision of the Constitution of New Mexico relating to separation of powers must be considered. This provision is found in Section 1, Article III of the Constitution of the State, and is as follows:

> "The powers of the government of this state are divided into three distinct department, the legislative, executive and judicial, and no person or collection of persons charged with the exercise of powers properly belonging to one of these departments shall exercise any powers properly belonging to either of the others, except as in this constitution otherwise expressly directed or permitted."

Certainly this is an unequivocal separation of power.

Finally, in considering this matter, it is necessary to realize that when the conservation act was amended by the 1949 Legislature, the provision for judicial review was completely revised in an effort to provide a "de novo" hearing before the Court. This statute, under which the present appeal is taken is found in Section 69-223 of the amended law, and it provides as follows:

"(b) Any party to such rehearing proceeding, dissatisfied with the disposition of the application for rehearing, may appeal therefrom to the district court of the county wherein is located any property of such party affected by the decision, by filing a petition for the review of the action of the commission within twenty (20) days after the entry of the order following rehearing or after the refusal or rehearing as the case may be. Such petition shall state briefly the nature of the proceedings before the commission and shall set forth the order or decision of the commission complained of and the grounds of invalidity thereof upon which the applicant will rely; provided, however, that the questions reviewed on appeal shall be only questions presented to the commission by the application for rehearing. Notice of such appeal shall be served upon the adverse party of parties and the commission in the manner provided for the service of summons in civil proceedings. The trial upon appeal shall be de novo, without a jury, and the transcript of proceedings before the commission, including the evidence taken in hearings by the commission, shall be received in evidence by the court in whole or in part upon offer by either party, subject to legal objections to evidence, in the same manner as if such evidence was originally offered in the district court. The commission action complained of shall be prima facie valid and the burden shall be upon the party or parties seeking review to establish the invalidity of such action of the commission. The court shall determine the issues of fact and of law and shall, upon a preponderance of the evidence introduced before the court, which may include evidence in addition to the transcript of proceedings before the commission, and the law applicable thereto, enter its order either affirming, modifying, or vacating the order of the commission. In the event the court shall modify or vacate the order or decision of the commission, it shall enter such order in lieu thereof as it may determine to be proper. Appeals may be taken from the judgment or decision of the district court to the supreme court in the same manner as provided for appeals from any other final judgment entered by a district court in this state. The trial of such application for relief from action of the commission and the hearing of any appeal to the supreme court from the action of the district court shall be expedited to the fullest possible extent."

Thus, it will be seen that in this argument we must consider first, that the general powers of the Commission are derived from the Legislature and that the power to fix the spacing of wells has been specifically delegated to it. Second, that the Constitution of New Mexico contains a specific and unambiguous provision providing for separation of powers of government. Third,

that the review statute, under which this appeal is taken, undertakes to authorize the court to conduct a "de novo" hearing, and to enter an order in lieu of the Commission's order, after hearing new and additional evidence which was not before the Commission.

General Applicable Principles of Administrative Law

Before proceeding with a discussion of the cases concerning the question here involved, we consider it proper to briefly mention some general principles of administrative law which are discussed in these cases and which we consider to be pertinent to the matter here under discussion.

As is stated in 42 American Jurisprudence, Public Administrative Law, Section 35:

> "The necessity for vesting administrative authorities with power to make rules and regulations because of the impracticability of the lawmakers providing general regulations for various and varying details of management, has been recognized by the court, and the power of the Legislature to vest such authority in administrative officers has been upheld as against various particular objections."

Questions such as are present in the instant case arise not so much from the authority of the Legislature to confer power upon the administrative board, but rather upon the nature of the power exercised by the board and extent to which judicial review may be had. This proposition involves the question of whether the power exercised by the administrative body is legislative or judicial. The distinction between these types of powers is sometimes difficult to make, but in general it is, as stated in 42 American Jurisprudence, Public Administrative Law, Section 36, as follows:

> "Legislative power is the power to make, alter, or repeal laws or rules for the future, to make a rule of conduct applicable to an individual, who but for such action would be free from it is to legislate. The judicial function is confined to injunctions, etc., preventing wrongs for the future, and judgments giving redress for those of the past."

The broad general powers delegated to the Oil Conservation Commission by the statutes which have been quoted coupled with the specific power to regulate the spacing of wells indicates to us that this is a wide discretionary authority, a legislative authority granted by the lawmakers to the Oil Conservation Commission. It obviously affects the actions of persons in the oil and gas industry in the future and has no reference to the protection of private rights as of the present or for the redress against wrongs which have been done in the past. In other words it appears to us that this is clearly a legislative rather than a judicial function. This brings us to the meat of the proposition insofar as the general applicable principles of administrative law are concerned. As is stated in 42 American Jurisprudence, Public Administrative Law, Section 190:

> "It is a well settled general principle that non-judicial functions cannot be exercised by or imposed upon courts, and statutes which attempt to make a court play a part in the administrative process by conferring upon it administrative or legislative, as distinguished from judicial, functions may contravene theprinciples of separation of powers among the different branches of our government."

And in Section 191, American Jurisprudence, follows this line of reasoning by stating:

> "The statute which provides or permits a court to revise the discretion of a commission in a legislative matter by considering the evidence and full record of the case, and entering the order it deems the commission ought to have made, is invalid as an attempt to confer legislative powers upon the courts."

Decisions of the Courts of other States

There are several decisions of the courts of the western States concerning the power of the court to review the

action of an administrative official or an administrative board. Before passing to the New Mexico cases, we would like to review briefly some of the language in these cases in other States which touch upon the subjects here involved.

The first case to which we wish to call the court's attention is the case of Manning v. Perry, 62 P. 2d 693 (Ariz.), This case involved an action between two parties who sought to obtain from the State Land Department a lease upon certain State land. After investigation and hearing, the Commissioner approved the application of one of the parties and the other party appealed. In the State of Arizona the Land Department consists of the Governor, the Secretary of State, Attorney General, State Treasurer, and State Auditor. After hearing this Land Department approved the decision of the Commissioner, and the party who had lost the application appealed to the court under the Constitution and statutes of Arizona. The case was tried in the superior court of one of the counties of Arizona without the aid of a jury and de novo as the statute seemed to contemplate that it should. The case was taken to the Supreme Court of Arizona upon appeal, the appellant contending that under the law of facts he was entitled to have his lease renewed. Concerning the question of the extent of the "trial de novo" as provided in the statute, the Arizona Supreme Court had this to say:

> "While the superior court on appeal from the Land Department tries the case de novo, it should not be forgotten that the court is not the agency appointed by law to lease state lands. The Legislature has vested that power in the Land Department. If it investigates and determines which of two or more applicants appears to have the best right to a lease, its decision should be accepted by the court, unless it be without support of the evidence, or is contrary to the evidence, or is the result of fraud or misapplication of the law."

The Arizona court discussed with approval the decisions from the State of Wyoming which have held in a similar vein:

"In speaking of the functions of the court on an appeal from the Land Department it is said, in Miller v. Hurley, 37 Wyo. 344, 262 P. 238, 'the discretion of the Land Department in leasing the public lands should be controlling' except in a case of the illegal exercise thereof, or in the case of fraud or grave abuse of such discretion.' It was further said in that case: 'In the first place, nowhere in the Constitution or statutes is the district court or a judge thereof, granted power to lease state lands. Both the Constitution and the statutes repose that power in the land board. In exercising such power, the land board exercises a wide discretion. (Citing Wyoming cases) If, by the simple expedient of an appeal from the decision of the land board, that discretion can be taken from the board and vested in the district court, as contended by appellant, then the discretion of the land board amounts to nothing on a contested case. It is an empty thing, a mere ignis fatuus'."

The Arizona court continues:

"And, we may add, a practice which permits the court to substitute its discretion for that of the Land Department would give us as many leasing bodies as there are superior courts in the state, or fourteen in number, instead of one as provided for by the Legislature--an intolerable situation."

This same view is followed in Denver & R.G.W.R. Co. v. Public Service Commission 100 P. 2d 552 (Utah). In that case the applicant for a motor carrier permit and the protestant both applied for rehearings after the Public Service Commission of Utah had granted an application with certain limitations. The matter was appealed to the District Court under the statutes of Utah. The court called attention to the fact that prior to the enactment of the 1935 statute the court's review of the action of the commission was limited to questions of law and the commission's findings of fact were final and not subject to review. However, in 1935 the Legislature changed the statute and provided that the District Court "shall proceed after a trial de novo". The Arizona court in considering the extent of the authority of the District Court had this to say:

"The expression 'trial de novo' has been used with two different meanings (3 Am.Jur. p. 358,

sec. 815): (1) A complete retrial upon new evidence; (2) a trial upon the record made before the lower tribunal. Locally we find an example of the first in Section 104-77-4, R.S.U. 1933, covering appeals from the justice court to the district court--- the case is tried in the district court as if it originated there. An example of the second meaning we find locally in our treatment of equity appeals wherein we say that the parties are entitled to a trial de novo upon the record."

In considering the effect of the amended Utah statute, as applied to these two different meanings, the court said:

"To review an action is to study or examine it again. Thus, 'trial de novo' as used here must have a meaning consistent with the continued existence of that which is to be again examined or studied. If, in these cases, the first meaning were applied to the use of the term 'trial de novo' then one could not consistently speak of it as a review, as the Commission's action would no longer exist to be re-examined or restudied. There would be no reason for making the Commission a defendant to defend something that had been automatically wiped out by instituting the district court action.

"What the Legislature has done by Section 9 is to increase the scope of the court's review of the record of the Commission's action to include questions of fact as well as questions of law. A submission to the court of the application, together with testimony other than the record of the testimony before the Commission was not contemplated. The Legislature had in mind the second meaning when it used the word 'trial de novo' here."

In the Wyoming case of Banzhaf v. Swan Co. 148 P.2d 325, the Wyoming Supreme Court had before it an appeal from the District Court of a Wyoming county, which had reversed the decision of the State Board of Land Commissioners on the question of to whom a state lease upon certain lands should be issued. Conflicting applications were filed in the office of the Commissioner of Public Lands. The Commissioner of Public Lands awarded the lease to Banzhaf, and upon appeal to the Board of Land Commissioners under the statute that award was set aside and a lease issued to Swan Company. Upon appeal to the District Court, the District Court reversed the Board of Land Commissioners, and the appeal here is taken by Banzhaf from the order of the District Court.

Under the Wyoming Constitution certain state officials constitute the Board of Land Commissioners and have the power to lease state lands. The statute concerning the leasing of state lands provides that any party aggrieved by the decision of the board may have an appeal to the District Court, and upon the appeal the contest proceeding "shall stand to be heard and for trial de novo, by said court".

In Miller v. Hurley, 262 P. 238, the court said as follows:

> "In the former decisions of this court above set forth, it has been held that the discretion of the land board is a substantial thing, and cannot be interfered with by the court, except in case of fraud or grave abuse, resulting in manifest wrong or injustice. Yet if appellant's contention were upheld, it would be necessary to hold that the discretion of the land board, conferred on it by the Constitution and statutes of this state, and heretofore recognized by the decisions of this court, is completely wiped out by an appeal. We cannot concur in such contentions, but hold that that discretion should be controlling, except in the case of an illegal exercise thereof, or in case of fraud or grave abuse of such discretion."

The case which we consider to have almost the same factual situation as the case here involved is the recent case of California Co. v. State Oil & Gas Board, 27 So.2d 542 (Miss.). This was an appeal to the Supreme Court of Mississippi from a final judgment of the Circuit Court of Adams County, Mississippi, which had dismissed an appeal taken by the California Company from an order of the State Oil & Gas Board. The order had granted to T. F. Hodge, the appellee, an exception to the general rule concerning the spacing of oil wells, which was the same type of order as is here involved. The Circuit Court had dismissed the appeal on constitutional grounds and no opportunity was offered the California Company to offer proof as to whether the Oil & Gas Board should have passed such an order. The Mississippi Statute at Section 6136, Code 1942, provides that anyone "being a party

to such petition may appeal from the decision of the board within ten days from the date of the rendition of the decision to the circuit court of Hinds county, or of the county in which the petitioner is engaged in business or drilling operations . . . .and the matter shall be tried de novo by the circuit court and the circuit court shall have full authority to approve or disapprove the action of the board."

The question raised here was that the requirement that the matter be tried de novo was unconstitutional and void because it undertook to confer nonjudicial functions upon the circuit court. It should be noted here that the Mississippi statute does not go as far as the New Mexico statute, since it gives the court authority to approve or disapprove while our statute gives the court authority to modify, or in fact to enter any order in lieu of the commission's order which the court deems to be proper. The Mississippi court called attention to the fact that the provision of the Mississippi statute for a de novo trial was inconsistent with the provision authorizing the court to approve or disapprove the action of the board. No such inconsistency appears to exist under the New Mexico statute. The Mississippi court found it possible under their statute "to hold the de novo provision unconstitutional but to sustain the power of the court to 'approve or disapprove' the action of the board". In so doing the court had this to say:

> "The decision of the foregoing questions is found to involve the question (1) of whether or not a trial de novo in the Circuit Court in the instant case would permit the Circuit Court to substitute its own findings and judgment for that of the State Oil and Gas Board on a purely legislative or administrative matter, and, (2) if so, whether or not the right of appeal should nevertheless be preserved by striking down the provision for a trial de novo and retaining the power of the Circuit Court to merely approve or disapprove the action of the

State Oil and Gas Board, upon the theory that to permit said Court on a trial de novo to substitute its own ideas as to the proper spacing of oil wells for those of this administrative or legislative body is unconstitutional, while the mere right to approve or disapprove its action is a valid exercise of judicial power on a hearing as to whether or not the decision of said Board in that regard is supported by substantial evidence, is arbitrary or capricious, beyond the power of the Board to make, or violates some constitutional right of the complaining party.

"We are unable to say that except for the provision granting a trial de novo the Legislature would not have given the right of appeal at all from any action of the Oil and Gas Board. It has made provision for appeals in many instances from the decisions of administrative boards created by statute in this State without requiring that the testimony taken before such boards be reduced to writing for such purpose. But it is unnecessary that we shall here digress to illustrate.

"The Legislature itself had the right in the first instance to prescribe the general rule and regulation as to the spacing of oil and gas wells and to provide for exceptions thereto under given circumstances, and it had the right to delegate this legislative power to a special administrative agency, composed of the State Oil and Gas Supervisor, who is to be a competent petroleum engineer or geologist with at least five years experience in the development and production of oil and gas, and therefore presumed to have expert knowledge as to the proper rules and regulations for the spacing of oil and gas wells, and also the Governor, Attorney General, and State Land Commissioner, as it has done by Section 5 of Chapter 117, Laws of 1932, now Section 6136, Code 1942. And it is to be conceded that in adopting such general rule and regulation, the Oil and Gas Board was acting in a legislative capacity; and we are of the opinion that in granting the exception involved in the instant case to the said general rule and regulation the said Board was likewise acting in at least a quasi legislative capacity. In order that any hearing shall be judicial in character, it must proceed upon past or present facts as such, which are of such nature that a judicial trial tribunal may find that they do or do not exist, while in making these conservation rules and the exceptions thereto the larger question is one of state policy. So that what is to be made of the facts depends upon their bearing upon a legislative policy for which persons of special training and special responsibility have been selected.

There appeared to be little doubt in the minds of the Mississippi court, and there is little doubt in ours, that if

the Legislature had seen fit it could have adopted this general spacing rule and regulation and could also have heard testimony as to whether exceptions should be provided for, and the fact that it may have conducted such a hearing would not have rendered its action judicial. The Mississippi court concluded that:

> "And since the Legislature had the power to delegate this function to a Board composed of the officials hereinbefore mentioned, we are of the opinion that the action of said Board in adopting both the general rules and regulations, as provided for by the statute, and the exceptions thereto after a hearing, was as heretofore stated likewise legislative; that, therefore, the Circuit Court would be without constitutional power on appeal to substitute its own opinion as to what are proper oil conservation measures for that of the State Oil and Gas Board, on a legislative or administrative question, since the separation of executive, legislative and judicial powers,. . . . . forbid."

In view of the presumption of validity of statutes, the Mississippi court held that the authority of the court to approve or disapprove the action of the board may be upheld by

> "limiting its authority in that behalf to the right to conduct a hearing to the extent only of determining whether or not the decision of the administrative agency is supported by substantial evidence, is arbitrary or capricious, beyond the power of the Board to make, or violates some constitutional right of the complaining party . . . . . ."

The court further held that in determining these questions the circuit court would be acting judicially and to that end it might hear evidence to the extent of determining what state of facts the administrative body acted on. But the court specifically limited the evidence which might be introduced by saying:

> "But to allow an appellant to present to the Circuit Court a different state of case or one based on additional facts would merely tend to becloud the issue as to whether or not the administrative body had based its decision on substantial evidence, had acted arbitrarily or capriciously, beyond its power, or violated some constitutional right of the party affected thereby. In other words, to permit a trial de novo in the Circuit

> Court on a legislative or administrative decision of the State Oil and Gas Board, within the common acceptance of the term 'tried de novo' would permit a party to withhold entirely any showing of his facts, as he contends them to be, from the original board composed of experts and of those charged with the responsibility of a great public policy of the State, and wait until on appeal when he will make his full disclosure for the first time before nonexperts in that field to determine as to the proper spacing of oil and gas wells. In such case the Court would be departing from its proper judicial function into the realm of things about which it has no such knowledge as would form the basis for intelligent action."

After disposing of the decisions of the Texas Courts, as not applicable to the Mississippi statute because based upon a statute providing for an independent action rather than an appeal, the opinion as a part of its conclusion recites:

> "Therefore, the only sound, practicable or workable rule that can be announced by the Court is to hold that when the appeal is from either a general rule and regulation or from an exception granted thereto, the Court to which the appeal is taken shall only inquire into whether or not the same is reasonable and proper according to the facts disclosed before the Board, that is to say, whether or not its decision is supported by substantial evidence or is arbitrary or capricious, or beyond the power of the Board to make, or whether it violates any consitutional right of the complaining party."

The concurring opinion of Justice Griffith considers the question of the power of the Court and of the type of evidence which may be presented, concluding as follows:

> "The result is the conclusion that the legislature could not confer upon either of the said judicial courts the original authority in either respect above mentioned, and since it could not do so directly, it could not do so by the indirect device of a trial de novo on appeal; and thus there is the further result that all the authority which could be conferred on the courts would be of a review to determine whether the Oil and Gas Board in its order acted within the authority conferred on it by statute, and if so, then whether in making its order it did so upon facts substantially sufficient to sustain its action.
>
> "The essential nature of such a review is such that it must be of what the Board had before it at the time it made its order. It would be an incongruity as remarkable to permit another and different

> record to be made up on appeal to the circuit court as it would be to allow another and a different record to be presented to this Court on an appeal to it. The question is, and must be, what did the Oil and Gas Board have before it, and all this the majority opinion has well and sufficiently pointed out.
>
> "But what the Oil and Gas Board had before it is best and most dependably shown by a certified transcript made by a competent person in precise duplication of what was there heard and what there transpired. It is an incongruity in merely another phase which omits such a transcript, and thereafter would call witnesses to prove what was heard by and what transpired before the Board, as is allowed to be done by the reversal in this case..."

It appears to us that these cases, particularly the last one, which involved an appeal from a board similar to our Oil Conservation Commission, clearly reflect that the most recent decisions leave to the administrative bodies the discretion which has been given them by the Legislature, and that the courts confine themselves solely to the question of whether there is substantial evidence in the record before the Commission on which the Commission's decision can be based, or, in other words, whether the administrative body acted arbitrarily. It further appears that since this substantial evidence rule is the basis for the extent of review, the transcript of evidence before the Commission is the only evidence which can logically be considered.

New Mexico Law Concerning Appeals and Reviews Of Orders Of Administrative Bodies

We come now to the New Mexico law concerning appeals from reviews or orders from administrative bodies, which we consider to bear out our position as to the power of this court to review a decision of the Oil Conservation Commission. As has

heretofore been stated, the pertinent provision of the Constitution of New Mexico is contained in Section 1 Article III and is as follows:

> "The powers of the government of this state are divided into three distinct departments, the legislative, executive, and judicial, and no person or collection of persons charged with the exercise of powers properly belonging to one of these departments, shall exercise any powers properly belonging to either of the others, except as in this constitution otherwise expressly directed or permitted."

Until rather recent years, the cases in New Mexico concerning the powers of the courts to review decisions of administrative bodies have been confined primarily to appeals from the action of the State Corporation Commission. The Constitution of New Mexico is unique in that it contains the provision for the powers of the Corporation Commission and further provides for removal of matters covered by the constitutional provision to the Supreme Court of New Mexico, and:

> "In the event of such removal by the company, corporation or common carrier, or other party to such hearing the Supreme Court may, upon application in its discretion, or of its own motion, require or authorize additional evidence to be taken in such cause; but in the event of removal by the commission, upon failure of the company, corporation, or common carrier, no additional evidence shall be allowed....
>
> "... the said court shall have the power and it shall be its duty to decide such cases on their merits, and carry into effect its judgments, orders, and decrees made in such cases, by fine, forfeiture, mandamus, injunction and contempt or other appropriate proceedings."
>
> (Article II Section 7 Constitution of New Mexico)

As the functions and duties of the Corporation Commission have grown, it has become necessary to enact a statute supplementing the Constitution, which provides in effect that a motor carrier being dissatisfied with an order of the Commission,

which order is not removable directly to the Supreme Court under the constitutional provisions, may:

> "Commence an action in the district court for Santa Fe County against the Commission as defendant, to vacate and set aside such order or determination, on the ground that it is unlawful or unreasonable. In any such proceeding the court may grant relief by injunction, mandamus or other extraordinary remedy....."

The statute further provides that:

> "The same shall be tried and determined as other civil actions without a jury."

(New Mexico Statutes 1941 Annotated 68-1363)

It should be borne in mind that some of the cases cited are under the constitutional provision, and some are under the statutory provision.

The first case in New Mexico appears to be Seward v. D. & R. G. 17 N. M. 557, which was a proceeding under the constitutional provision, moving directly from the Commission to the Supreme Court. In this case the matter was removed by the Commission when the carrier refused to comply with the order, and the court refused to allow additional evidence under the Constitutional provision. The Attorney General took the position that the Supreme Court had a right to form its independent judgment in the matter and was not confined to a consideration of the reasonableness and lawfulness of the order of the Commission. He based his position upon the language in the statute quoted above, that the court shall have "the power and it shall be its duty to decide such cases upon their merits". The Supreme Court had this to say:

> "Now if the contention is sound then the provision just quoted invests this court with legislative power to fix rates. There is no doubt but that the people of the state, by constitutional provision could confer such power upon the judges of the Supreme Court. If they saw

> fit they might combine all the power of government in one department, but such action would not be in accord with the settled policy of the states of the Union, where it has been the studied purpose to, so far as possible, keep separate the three great departments, and we should not so construe the provision as conferring legislative power upon this body, unless compelled to do so by clear and unmistakable language."

The court held that the only thing to be decided upon the appeal by the Commission was the reasonableness and lawfulness of the order, and they concluded that if the court finds the order reasonable and lawful, it enters a judgment to that effect, but if it finds it unlawful and unreasonable, it refuses to enforce it and the State Corporation Commission may proceed to form a new order under its rule.

This proposition was further discussed in Seaberg v. Raton Public Service Co., 33 N.M. 59; 8 P.2d 100, in which the petitioner had removed a matter before the Corporation Commission directly to the Supreme Court, and the Corporation Commission filed a motion to dismiss. The facts of the case are not particularly pertinent to the present question, but some of the language of the court indicates the position which it was quick to take in these matters. We quote from the case as follows:

> "The proceeding of removal is not for the review of judicial action by the commission. It is to test the reasonableness and lawfulness of its orders. The function of the commission is legislative; that of the court, judicial. The commission is not given power to enforce any order; it being merely a rate-making or rule-making body, doing what, if there were no commission, the Legislature alone could do. The court, on the other hand, can make no rate or rule, since it lacks the legislative power."

Perhaps the most complete discussion of the matter arose in the case of Harris v. State Corporation Commission 46 N.M. 352; 128 P. 2d. 323, which was an appeal under the statute

to the district court of Santa Fe County. The carrier had been granted a certificate and another carrier, adversely affected, appealed to the district court. The appeal to the district court was taken by way of a complaint filed by the protestant. At the trial, the plaintiff, instead of introducing the record of the hearing before the Commission, introduced new evidence by way of testimony of seven witnesses. Upon conclusion of the evidence the court made many findings contrary to those of the Commission and concluded, as a matter of law, that the action of the Commission was unlawful and unreasonable. The first question discussed was the scope of judicial review provided for in the statute. The court goes into a rather exhaustive review of the New Mexico authorities and discusses several Law Review articles concerning the subject. Some of its concluding remarks are as follows:

> "When our Legislature enacted Ch. 154, L. 1933, it declared its purpose and policy to confer upon the Commission the power and authority to make it its duty to supervise and regulate the transportation of persons and property by motor vehicle for hire upon the public highways of this state and to relieve the undue burdens on the highways, and to protect the safety, and welfare of the travelling and shipping public and to preserve, foster and regulate transportation and permit the co-ordination of transportation facilities.....
>
> "Counsel for Appellee contends that in the removal of a cause pending before the Commission under Sec. 51, etc. of the Act, the trial before the District Court is a trial de novo. This view is repelled distinctly by what we said in the Seward Case.....
>
> "Even where statutes of other states have said that upon judicial review of administrative or legislative acts the trial shall be de novo, some courts have held such provision unconstitutional, others hold that the de novo provision is limited to the ascertainment by the court of whether the jurisdictional facts exist and whether there had been due process, and whether the Commission had kept within its lawful authority.

> "That question of constitutional right and power raised by administrative action must be tried de novo so that the court may reach its own independent judgment on the facts and the law without being bound by the rule of administrative finality of the facts and that additional evidence may be introduced so that these questions of constitutional right and power need not be decided on the administrative record alone, may be conceded."
>
> "We hold that the District Court erred in receiving and considering testimony other than that which had been produced at the hearing before the Commission."

The most recent case on this subject is New Mexico Transportation Co., Inc. v. State Corporation Commission, 51 N. M. 59; 178 P. 2d 580, in which the Commission affirmed the position taken in Harris v. State Corporation Commission, supra, and refused to disturb an order of the State Corporation Commission. The Court said:

> "Following the rules there announced, we are unable to say from an examination of the record that the order of the Commission granting these certificates was either unlawful or unreasonable. It is not sufficient that we might have reached a different conclusion."

This matter has also been discussed in general in cases arising out of the enforcement of the liquor laws of New Mexico by the Bureau of Revenue. Our statutes authorize the Commissioner of Revenue to establish a Division of Liquor Control and to appoint a chief of this division to administer the powers and duties of it.

(New Mexico Statutes 1941 Annotated, 61-501 to 61-525)

Among the powers given to the Division of Liquor Control is the power to issue, revoke, cancel or suspend licenses.

There are different appeal provisions from orders referring to the issuance of licenses and those referring to cancellation or revocation of licenses. The provisions relative to appeal of orders concerning issuance of licenses are found in

Section 61-516 of New Mexico Statutes 1941 Annotated. This section originally provided as follows:

> "Any person, firm or corporation aggrieved by any decision made by the chief of division as to the issuance or refusal to issue any such additional license may appeal therefrom to the district court of Santa Fe County, by filing a petition therefor in said court within thirty (30) days from the date of the decision of the chief of division, and a hearing on the matter may be had in the district court. Provided, however, that the decision of the chief of division shall continue in full force and effect, pending a reversal or modification thereof by the district court."

In 1945 the provision was amended by adding the words "which hearing shall be de novo".

The section of the statute dealing with revocation and suspension of licenses, and appeals from such orders, is Section 61-605, New Mexico Statutes 1941 Annotated, which provides, among other things, that:

> "The matter on appeal shall be heard by the judge of said court without a jury, and such court shall hear such appeal at the earliest possible time granting the matter of the appeal a preference on the docket. The judge, for good cause shown, may receive evidence in such proceedings in addition to that appearing in the record of hearing and shall set aside and void any order or finding which is not sustained by, or has been overcome by, substantial, competent, relevant and credible evidence."

This section of the statute has not been amended to provide for a de novo hearing.

In the case of Flocck v. Bureau of Revenue, 44 N.M. 134; 100 P. 2d 235, an appeal was taken under the section relating to cancellation of a liquor license, Section 61-605 New Mexico Statutes 1941 Annotated. Some question was raised as to the Constitutionality of the liquor control act, but the court did not pass upon that question. It did, however, have this to say:

"Assuming the constitutionality of Sec. 1303, it did not undertake to vest in the district court the administrative function of determining whether or not the permit should be granted. It gave the court authority only to determine whether upon the facts and law, the action of the Commissioner in cancelling the license was based upon an error of law or was unsupported by substantial evidence or clearly arbitrary or capricious. (Ha-Ping Products Co. v. Blair, 371 U.S. 470, 48 S. Ct. 544, 70 S. Ed. 1246); otherwise it would be a delegation of administrative authority to the district court in violation of the Constitution. Bradley v. Texas Liquor Control Board, Tex. Civ. App., 108 S. W. 2d 300; State v. Great Northern Ry. Co., 130 Minn. 82, 153 N.W. 247, Ann. Cas. 1917B, 1201.

"The New Mexico Liquor Control Act is an exercise of the police power of the state, for the welfare, health peace, temperance and safety of its people. It prescribes the terms and conditions upon which licenses shall be issued and the grounds and procedure for their cancellation; all of which are made purely administrative."

Apparently the question was not raised in this case as to the introduction of new evidence.

However, in the case of Chiordi v. Jernigan 48 N.M. 398; 129 P. 2d 640 this same statute was under consideration. After revocation of his license, a licensee appealed to the district court of Santa Fe County. In discussing the authority or jurisdiction of the district court, the Supreme Court had this to say:

"No provision is made on appeal for a trial de novo, and jury trials are specifically excluded. It is provided that the judge for good cause shown may receive additional evidence. It is obvious that he must review the evidence taken in the hearing before the Chief of Division. As the trial is not de novo the Chief of Division's decision on the facts must be reviewed as he heard it, and it could not be if additional evidence was authorized upon the question of whether appellee was the party in interest. It is our conclusion that the new evidence which may be admitted must be confined to questions of whether the Chief of Division acted fraudulently, capriciously or arbitrarily in rendering his decision. Ha-Ping Products Co. v. Blair, supra; Flocek v. Bureau of Revenue, supra; Texas Liquor Control Board v. Floyd, supra.

> "The proceedings before the Chief of Division, while quasi judicial, were essentially administrative. The questions before the district court and here, are questions of law. They are, whether he acted fraudulently, arbitrarily or capriciously in making his order, and, whether such order was supported by substantial evidence, and, generally, whether the Chief of Division acted within the scope of the authority conferred by the liquor control act."

It should be noted that some of the conclusions appear here to be based upon the fact that there is no provision for a trial de novo under this section of the statute.

It may have been this language which prompted the Legislature of 1945 to insert in Section 61-516 New Mexico Statutes 1941 Annotated, which is the section dealing with appeals refusing to issue licenses, the de novo provision. As has been noted above, however, this provision was not inserted in Section 61-505.

In the recent case of Yarbrough v. Montoya, 214 P. 2d 769, the Supreme Court of New Mexico was called upon to pass upon the effect of the insertion of the de novo provision in Section 61-516, New Mexico Statutes 1941 Annotated. As will be recalled this de novo provision was inserted after the Flocek and Chiordi cases were decided. The Court again called attention to the fact that the Chief of the Liquor Division is given wide administrative judgment and discretion with respect to new licenses, and that the statute does not provide for formal hearing, and there is no requirement that he may only consider evidence that would be admissible in a court hearing. There is likewise no limitation upon evidence before the Oil Conservation Commission. The Court, in concluding that the de novo provision does not change the fundamental proposition of limitation of judicial review, had this to say:

"We are further committed to the doctrine that the courts may not overrule the acts of administrative officers on matters committed to their discretion unless their actions are unlawful, unreasonable, arbitrary, capricious, or not supported by evidence."

The Court said further:

"The applicant says this rule no longer obtains since the provision for a hearing de novo was written into the liquor law in 1945. A sufficient answer to this contention is found in Flocck case, supra, where in speaking of the powers of the District Court on appeal under the 1939 Liquor Act, we said: 'Assuming the constitutionality of Sec. 1303, it did not undertake to vest in the district court the administrative function of determining whether or not the permit should be granted. It gave the court authority only to determine whether upon the facts and law, the action of the Commissioner in cancelling the license was based upon an error of law or was unsupported by substantial evidence or clearly arbitrary or capricious (Ma-King Products Co. v. Blair, 271 U. S. 479, 46 S. Ct. 544, 70 L. Ed. 1046); otherwise it would be a delegation of administrative authority to the district court in violation of the Constitution.'

"See also the case of Harris v. State Corporation Commission, 48 N. M. 353, 150 P. 2d 383."

It is true that the statutes for appeal from orders of the Commissioner of Public Lands, Section 8-367 New Mexico Statutes, 1941 Annotated, provide for trials de novo, but we find no cases in which the question of extent of review was raised.

CONCLUSION

Based upon the decisions and authorities cited, it is the position of Texas Pacific Coal and Oil Company that the nature and scope of the review by this Court of orders of the Oil Conservation Commission, including the question of what evidence may be presented, is limited as follows:

1. In view of the apparent attempt to delegate non-judicial functions to this Court, the review provisions of the statute are unconstitutional unless limited by the Court to the affirming or vacating of the order of the Commission.

2. This Court is limited upon review to a determination of whether the action of the Commission was unsupported by substantial evidence or was clearly arbitrary or capricious.

3. In making this determination this Court cannot pass upon the Commission's action unless it limits itself to the transcript of evidence before the Commission.

Respectfully submitted,

ATWOOD, MALONE & CAMPBELL

By_____

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TEXAS PACIFIC COAL & OIL COMPANY

MEMORANDUM BRIEF

THE NATURE AND SCOPE OF THE REVIEW BY THE DISTRICT COURT OF AN ORDER OF THE OIL CONSERVATION COMMISSION INCLUDING THE QUESTION OF WHAT EVIDENCE MAY BE PRESENTED UPON APPEAL.

This case represents, the first appeal ever taken in the State of New Mexico from an order of the Oil Conservation Commission. It is taken under the provisions of the oil and gas conservation law of this State which was enacted in 1935 and which was re-onacted by the 1949 Legislature with certain amendments. Included in the amendments was one which changed the appeal and review sections under which this appeal is taken.

At the outset it would seem proper to state specifically the position of the Texas Pacific Coal and Oil Company in this case and its attitude concerning the power of the District Court to review matters decided by the Commission, including the nature of the evidence which may properly be heard by this Court.

The original application herein was filed by Amerada Petroleum Corporation and in its application it requested that it be granted an exception from the state-wide rules concerning the spacing of oil and gas wells. The general spacing program in New Mexico has for a number of years been upon a forty acre basis, and deviations from that spacing pattern have been granted from time to time upon application for an exception to the rule. It is of some significance to note that heretofore exceptions have been requested for spacing patterns for less than forty acres, but this appears to be the first instance in this State in which application has been made for an exception requesting a spacing pattern for more than forty acres. It should be noted in passing that Amerada is not being forced by Commission or anyone else to drill on forty acre locations. Texas Pacific Coal and Oil Company is the owner of certain leases in the field here involved, and it entered the hearing before the Commission protesting the granting of the exception to the state-wide rule. The Commission, after hearing the evidence, denied the application for the exception, by its order No. R-2, in which it found in effect that the evidence submitted by the applicant was insufficient to prove what the Commission considered to be necessary matters of proof for the granting of an exception to the state-wide rule. The applicant then filed its petition for rehearing

setting out the respects in which it considered the Commission in error, as required by the statute, and upon the denial of the motion for rehearing it takes this appeal to the Court, in which appeal, under the statute, it is limited to the same questions which were presented to the Commission in its application for rehearing. There is no constitutional question presented in the petition for Review.

The first matter which Texas Pacific Coal and Oil Company would like to call to the attention of the Court, with the request that it be determined at this time, is the nature and extent of the review of the Commission's order which may be obtained before this Court. We consider this proposition fundamental, both from a substantive and a procedural point of view. It is a proposition which we raise at the outset, in order to avoid the possibility of delay in the disposition of this matter by the introduction of evidence and the inevitable objection to its admissiability. It is our position that the so-called "de novo" provisions in the New Mexico appeal statute violate the Constitution of the State of New Mexico, and that this Court, if review is to be granted, is limited upon review to the transcript of evidence before the Conservation Commission and only such other evidence as may bear upon the power of the Commission to act. It is our further position that this Court can only inquire into whether or not the decision of the Commission is supported by substantial evidence, or is arbitrary or capricious, or beyond the power of the Commission to make, or violates some constitutional right of the appellant.

Applicable Constitutional and Statutory Provisions

In order that the Court may bear in mind through this argument the basis of the position of the Texas Pacific Coal and Oil Company, we wish to call to the attention of the Court the constitutional and statutory provisions to which we will make reference and which we consider pertinent to this matter.

As has heretofore been stated, the Oil Conservation Commission was created and its power defined by the re-enactment of the 1935 Statute by the 1949 Legislature, which Statute now appears at Chapter 69 of the 1949 Accumulative Pocket Supplement of the New Mexico Statutes 1941 Annotated. Section 69-210 of that Act defines the general powers of the Commission as follows:

> "The commission is hereby empowered, and it is its duty, to prevent the waste prohibited by this act and to protect correlative rights, as in this act provided. To that end, the commission is empowered to make and enforce rules, regulations and orders, and to do whatever may be reasonably necessary to carry out the purposes of this act, whether or not indicated or specified in any section hereof."

Section 69-211 enumerates certain specific powers of the Commission, including the one which is pertinent to this case by stating:

> "Apart from any authority, express or implied, elsewhere given to or existing in the commission by virtue of this act or the statute of this state, the commission is hereby authorized to make rules, regulations and orders for the purposes and with respect to the subject matter stated herein, viz:
> . . . . . .
> "(10) To fix the spacing of wells;
> . . . . . .

It should be apparent that the Legislature has delegated to the Oil Conservation Commission wide powers to deal with matters involving the production of oil and gas in this State, and that such powers are legislative powers which could be exercised by the Legislature itself or through committees, except for the fact that the Legislature obviously considered it more practical to delegate these powers to an administrative body composed of the Governor of the State, the Commissioner of Public Lands and the State Geologist, as a member and director. In connection with this legislative power invested in the Oil Conservation Commission, the provision of the Constitution of New Mexico relating to separation of powers must be considered. This provision is found in Section 1, Article III of the Constitution of the State, and is as follows:

> "The powers of the government of this state are divided into three distinct departments, the legislative, executive and judicial, and no person or collection of persons charged with the exercise of powers properly belonging to one of these departments shall exercise any powers properly belonging to either of the others, except as in this constitution otherwise expressly directed or permitted."

Certainly this is an unequivocal separation of power.

Finally, in considering this matter, it is necessary to realize that when the conservation act was amended by the 1949 Legislature, the provision for judicial review was completely revised in an effort to provide a "de novo" hearing before the Court. This statute, under which the present appeal is taken is found in Section 69-223 of the amended law, and it provides as follows:

"(b) Any party to such rehearing proceeding, dissatisfied with the disposition of the application for rehearing, may appeal therefrom to the district court of the county wherein is located any property of such party affected by the decision, by filing a petition for the review of the action of the commission within twenty (20) days after the entry of the order following rehearing or after the refusal or rehearing as the case may be. Such petition shall state briefly the nature of the proceedings before the commission and shall set forth the order or decision of the commission complained of and the grounds of invalidity thereof upon which the applicant will rely; provided, however, that the questions reviewed on appeal shall be only questions presented to the commission by the application for rehearing. Notice of such appeal shall be served upon the adverse party or parties and the commission in the manner provided for the service of summons in civil proceedings. The trial upon appeal shall be de novo, without a jury, and the transcript or proceedings before the commission, including the evidence taken in hearings by the commission, shall be received in evidence by the court in whole or in part upon offer by either party, subject to legal objections to evidence, in the same manner as if such evidence was originally offered in the district court. The commission action complained of shall be prima facie valid and the burden shall be upon the party or parties seeking review to establish the invalidity of such action of the commission. The court shall determine the issues of fact and of law and shall, upon a preponderance of the evidence introduced before the court, which may include evidence in addition to the transcript of proceedings before the commission, and the law applicable thereto, enter its order either affirming, modifying, or vacating the order of the commission. In the event the court shall modify or vacate the order or decision of the commission, it shall enter such order in lieu thereof as it may determine to be proper. Appeals may be taken from the judgment or decision of the district court to the supreme court in the same manner as provided for appeals from any other final judgment entered by a district court in this state. The trial of such application for relief from action of the commission and the hearing of any appeal to the supreme court from the action of the district court shall be expediated to the fullest possible extent."

Thus, it will be seen that in this argument we must consider first, that the general powers of the Commission are derived from the Legislature and that the power to fix the spacing of wells has been specifically delegated to it. Second, that the Constitution of New Mexico contains a specific and unambiguous provision providing for separation of powers of government. Third, that the review statute, under which this appeal is taken, undertakes to authorize the court to conduct a "de novo" hearing, and to enter an order in lieu of the Comission's order, after hearing new and additional evidence which was not before the Commission.

General Applicable Principles of Administrative Law

Before proceeding with a discussion of the cases concerning the question here involved, we consider it proper to briefly mention some general principles of administrative law which are discussed in these cases and which we consider to be pertinent to the matter here under discussion.

As is stated in 42 American Jurisprudence, Public Administrative Law, Section 35:

> "The necessity for vesting administrative authorities with power to make rules and regulations because of the impracticability of the lawmakers providing general regulations for various and varying details of management, has been recognized by the court, and the power of the Legislature to vest such authority in administrative officers has been upheld as against various particular objections."

Questions such as are present in the instant case arise not so much from the authority of the Legislature to confer power upon the administrative board, but rather upon the nature of the power exercised by the board and extent to which judicial review may be had. This proposition involves the question of whether the power exercised by the administrative body is legislative or judicial. The distinciton between these types of powers is sometimes difficult to make, but in general it is, as stated in 42 American Jurisprudence, Public Administrative Law, Section 36, as follows:

> "Legilsative power is the power to make, alter, or repeal laws or rules for the future, to make a rule of conduct applicable to an individual, who but for such action would be free from it is to legislate. The judicial function is confined to injunctions, etc., preventing wrongs for the future, and judgments giving redress for those of the past."

The broad general powers delegated to the Oil Conservation Commission by the statutes which have been quoted, coupled with specific power to regulate the spacing of wells indicates to us that this is a wide discretionary authority, a legislative authority granted by the lawmakers to the Oil Conservation Commission. It obviously affects the actions of persons in the oil and gas industry in the future and has no reference to the protection of private rights as of the present or for the redress against wrongs which have been done in the past. In other words it appears to us that this is clearly a legislative rather than a judicual function. This brings us to the meat of the proposition insofar as the general applicable principles of administrative law are concerned. As is stated in 42 American Jurisprudence, Public Administrative Law, Section 190:

> "It is a well settled general principle that non-judicial functions cannot be exercised by or imposed upon courts, and statutes which attempt to make a court play a part in the administrative process by conferring upon it administrative or legislative, as distinguished from judicial, functions may contravene the principles of separation of powers among the different branches of our government."

And in Section 191, American Jurisprudence, follows this line of reasoning by stating:

> "The statute which provides or permits a court to revise the discretion of a commission in a legislative matter by considering the evidence and full record of the case, and entering the order it deems the commission ought to have made, is invalid as an attempt to confer legislative powers upon the courts."

Decisions of the Courts of other States

There are several decisions of the courts of the western States concerning the power of the court to review the action of an administrative official or an administrative board. Before passing to the New Mexico cases, we would like to review briefly some of the language in these cases in other States which touch upon the subjects here involved.

The first case to which we wish to call the court's attention is the case of Manning V. Perry, 62 P. 2d 693 (Ariz.). This case involved an action between two parties who sought to obtain from the State Land Department a lease upon certain State land. After investigation and hearing, the Commissioner approved the application of one of the parties and the other party appealed. In the State of Arizona the Land Department consists of the Governor, the Secretary of State, Attorney General, State Treasurer, and State Auditor. After hearing this Land Department approved the decision of the Commissioner, and the party who had lost the application appealed to the court under the Constitution and statutes of Arizona. The case was tried in the superior court of one of the counties of Arizona without the aid of a jury and de novo as the statute seemed to contemplate that it should. The case was taken to the Supreme Court of Arizona upon appeal, the appellant contending that under the law of facts he was entitled to have his lease renewed. Concerning the question of the extent of the "trial de novo" as provided in the statute, the Arizona Supreme Court had this to say:

> "While the superior court on appeal from the Land Department tries the case de novo, it should not be forgotten that the court is not the agency appointed by law to lease state lands. The Legislature has vested that power in the Land Department. If it investigates

> and determines which of the two or more applicants appears to have the best right to a lease, its decision should be accepted by the court, unless it be without support of the evidence, or is contrary to the evidence, or is the result of fraud or misapplication of the law."

The Arizona court discussed with approval the decisions from the State of Wyoming which have held a similar vein:

> "In speaking of the functions of the court on an appeal from the Land Department it is said, in Miller v. Burley, 37 Wyo. 334, 262 P. 236, 'the discretion of the Land Department in leasing the public lands should be controlling' except in a case of the illegal exercise thereof, or in the case of fraud or grave abuse of such discretion.' It was further said in that case: 'In the first place, nowhere in the Constitution or statutes is the district court or judge thereof, granted power to lease state lands. Both the Constitution and the statutes repose that power in the land board. In exercising such power, the land board exercises a wide discretion. (Citing Wyoming cases) If, by the simple expedient of an appeal from the decision of the land board, that discretion can be taken from the board and vested in the district court, as contended by appellant, then the discretion of the land board amounts to nothing on a contested case. It is an empty thing, a mere ignis fatuus'."

The Arizona court continues:

> "And, we may add, a practice which permits the court to substitute its discretion for that of the Land Department would give us as many leasing bodies as there are superior courts in the state, or fourteen in number, instead of one as provided for by the Legislature ----an intolerable situation."

This same view is followed in Denver & R. G. W. R. Co. v. Public Service Commission 100 P. 2d 552 (Utah). In that case the applicant for a motor carrier permit and the protestant both applied for rehearings after the Public Service Commission of Utah had granted an application with certain limitations. The matter was appealed to the District Court under the statutes of Utah. The court called attention to the fact that prior to the enactment of the 1935 statute the court's review of the action of the commission was limited to questions of law and the commission's findings of fact were final and not subject to review. However, in 1935 the Legislature changed the statute and provided that the District Court "shall proceed after a trial de novo." The Arizona court in considering the extent of the authority of the District Court had this to say:

> "The expression 'trial de novo' has been used with two different meanings (3 Am. Jur. p. 356,

sec. 815): (1) A complete retrial upon new evidence; (2) a trial upon the record made before the lower tribunal. Locally we find an example of the first in Section 104-77-4, R.S.U. 1933, covering appeals from the justice court to the district court--the case is tried in the district court as if it originated there. An example of the second meaning we find locally in our treatment of equity appeals wherein we say that the parties are entitled to a trial de novo upon the record."

In considering the effect of the amended Utah statute, as applied to these two different meanings, the court said:

"To review an action is to study or examine it again. Thus, 'trial de novo' as used here must have a meaning consistent with the continued existence of that which is to be again examined or studied. If, in these cases, the first meaning were applied to the use of the term 'trial de novo' then one could not consistently speak of it as a review, as the Commission's action would no longer exist to be re-examined or restudied. There would be no reason for making the Commission a defendant to defend something that had been automatically wiped out by instituting the district court action.

"What the Legislature has done by Section 9 is to increase the scope of the court's review of the record of the Commission's action to include questions of fact as well as questions of law. A submission to the court of the application, together with testimony other than the record of the testimony before the Commission was not contemplated. The Legislature had in mind the second meaning when it used the word 'trial de novo' here."

In the Wyoming case of Banzhaf v. Swan Co. 148 P. 2d 225, the Wyoming Supreme Court had before it an appeal from the District Court of a Wyoming county, which had reversed the decision of the State Board of Land Commissioners on the question of to whom a state lease upon certain lands should be issued. Conflicting applications were filed in the office of the Commissioner of Public Lands. The Commissioner of Public Lands awarded the lease to Banzhaf, and upon appeal to the Board of Land Commissioners under the statute that award was set aside and a lease issued to Swan Company. Upon appeal to the District Court, the District Court reversed the Board of Land Commissioners, and the appeal here is taker by Banzhaf from the order of the District Court.

Under the Wyoming Constitution certain state officials constitute the Board of Land Commissioners and have the power to lease state lands. The statute concerning the leasing of state lands provides that any party aggrieved by the decision of the board may have an appeal to the District Court, and upon the appeal the contest proceeding "shall stand to be heard and for trial de nove, by said court."

In Miller v. Hurley, 262 p. 238, the court said as follows:

> "In the former decisons of this court above set forth, it has been held that the discretion of the land board is a substantial thing, and cannot be interfered with by the court, except in case of fraud or grave abuse, resulting in manifest wrong or injsutice. Yet if appellant's contention were upheld, it would be necessary to hold that the discretion of the land board, conferred on it by the Constitution and statutes of this state, and heretofore recognized by the decidons of this court, is completely wiped out by an appeal. We cannot concur in such contentions, but hold that that discretion should be controlling, except in the case of an illegal exercise thereof, or in case of fraud or grave abuse of such discretion."

The case which we consider to have almost the same factual situation as the case here involved is the recent case of California Co. v. State Oil & Gas Board, 27 Sc. 2d. 542 (Miss.) This was an appeal to the Supreme Court of Mississippi from a final judgment of the Circuit Court of Adams County, Mississippi, which had dismissed an appeal taken by the California Company from an order of the State Oil & Gas Board. The order had granted to T. F. Hodge, the appellee, an exception to general rule concerning the spacing of oil wells, which was the same type of order as is here involved. The Circuit Court had dismissed the appeal on constitutional grounds and no opportunity was offered the California Company to offer proof as to whether the Oil & Gas Board should have passed such an order. The Mississippi Statute at Section 6136, Code 1942, provides that anyone "being a party to such petition may appeal from the decision of the board within ten days from the date of the rendition of the decision to the circuit court of Hinds county, or of the county in which the petitioner is engaged in business or drilling operations . . . .and the matter shall be tried de novo by the circuit court and the circuit court shall have full authority to approve or disapprove the action of the board."

The question raised here was that the requirement that the matter be tried de novo unconstitutional and void because it undertook to confer nonjudicial functions upon the circuit court. It should be noted here that the Mississippi statute does not go as far as the New Mexico statute, since it gives the court authority to approve or disapprove while our statute gives the court authority to modify, or in fact to enter any order in lieu of the commissions's order which the court deems to be proper. The Mississippi court called attention to the fact that the provision of the Mississippi statute for a de novo trial was inconsistant with the provision authorizing the court to approve or disapprove the action of the board. No such incon-

sistency appears to exist under the New Mexico statute. The Mississippi court found it possible under their statute "to hold the de novo provision unconstitutional but to sustain the power of the court to 'approve or disapprove' the action of the board." In so doing the court had this to say:

> "The decision of the foregoing questions is found to involve the question (1) or whether or not a trial de novo in the Circuit Court in the instant case would permit the Circuit Court to substitute its own findings and judgment for that of the State Oil and Gas Board on a purely legislative or administrative matter, and, (2) if so, whether or not the right of appeal should nevertheless be preserved by striking down the provision for a trial de novo and retaining the power of the Circuit Court to merely approve or disapprove the action of the State Oil and Gas Board, upon the theory that to permit said Court on a trial de novo to substitute its own ideas as to the proper spacing of oil wells for those of this administrative or legislative body is unconstitutional, while the mere right to approve or disapprove its action is a valid exercise of judicial power on a hearing as to whether or not the decision of said Board in that regard is supported by substantial evidence, is arbitrary or capricious, beyond the power of the Board to make, or violates some constitutional right of the complaining party.
>
> "We are unable to say that except for the provision granting a trial de novo the Legislature would not have given the right of appeal at all from any action of the Oil and Gas Board. It has made provision for appeals in many instances from the decisions of administrative boards created by statute in this State without requiring that the testimony taken before such boards be reduced to writing for such purpose. But it is unnecessary that we shall here digress to illustrate.
>
> "The Legislature itself had the right in the first instance to prescribe the general rule and regulation as to the spacing of oil and gas wells and to provide for exceptions therto under given circumstances, and it had the right to delegate this legislative power to a special administrative agency, composed of the State Oil and Gas Supervisor, who is to be a competent petroleum engineer or geologist with at least five years experience in the development and production of oil and gas, and therfore presumed to have expert knowledge as to the proper rules and regulations for the spacing of oil and gas wells, and also the Governor, Attorney General, and State Land Commissioner, as it has done by Section 5 of Chapter 117, Laws of 1932, now Section 6136, Code 1942. And it is to be conceded that in adopting such general rule and regulation, the Oil and Gas Board was acting in a legislative capacity; and we are of the opinion that in granting the exception involved in the instant case to the said general rule and regulation the said Board was likewise acting in at least a quasi legislative capacity. In order that any hearing shall be judicial in character, it must proceed upon

> past or present facts as such, which are of such nature that a judicial trial tribunal may find that they do or do not exist, while in making these conservation rules and the exceptions thereto the larger question is one of state policy. So that what is to be made of the facts depends upon their bearing upon a legislative policy for which persons of special training and special responsibility have been selected.

There appeared to be little doubt in the minds of the Mississippi court, and there is little doubt in ours, that if the Legislature had seen fit it could have adopted this general spacing rule and regulation and could also have heard testimony as to whether exceptions should be provided for, and the fact that it may have conducted such a hearing would not have rendered its action judicial. The Mississippi court concluded that:

> "And since the Legislature had the power to delegate this function to a Board composed of the officials hereinbefore mentioned, we are of the opinion that the action of said Board in adopting both the general rules and regulations, as provided for by the statute, and the exceptions thereto after a hearing, was as heretofore stated likewise legislative; that, therefore, the Circuit Court would be without constitutional power on appeal to substitute its own opinion as to what are proper oil conservation measures for that of the State Oil and Gas Board, on a legislative or administrative question, since the separation of executive, legislative and judicial powers,.....forbid."

In view of the presumption of validity of statutes, the Mississippi court held that the authority of the court to approve or disapprove the action of the board may be upheld by

> "limiting its authority in that behalf to the right to conduct a hearing to the extent only of determining whether or not the decision of the administrative agency is supported by substantial evidence, is arbitrary or capricious, beyond the power of the Board to make, or violates some constitutional right of the complaining party....."

The court further held that in determining these questions the circuit court would be acting judicially and to that end it might hear evidence to the extent of determining what state of facts the administrative body acted on. But the court specifically limited the evidence which might be introduced by saying:

> "But to allow an appellant to present to the Circuit Court a different state of case or one based on additional facts would merely tend to becloud the issue as to whether or not the administrative body had based its decision on substantial evidence, had acted arbitrarily or capriciously, beyond its power, or violated some constitutional right of the party affected thereby. In other words, to permit a trial de novo in the Circuit Court on a legislative or administrative

> decision of the State Oil and Gas Board, within the common acceptance of the term 'tried de novo' would permit a party to withold entirely any showing of these facts, as he contends them to be, from the original board composed of experts and of those charged with the responsibility of a great public policy of the State, and wait until on appeal when he will make his full disclosure for the first time before nonexperts in that field to determine as to the proper spacing of oil and gas wells. In such case the Court would be departing from its proper judicial function into the realm of things about which it has no such knowledge as would form the basis for intelligent action."

After disposing of the decisions of the Texas Courts, as not applicable to the Mississippi statute because based upon a statute providing for an independent action rather than an appeal, the opinion as a part of its conclusion recites:

> "Therefore, the only sound, practicable or workable rule that can be announced by the Court is to hold that when the appeal is from either a general rule and regulation or from an exception granted thereto, the Court to which the appeal is taken shall only inquire into whether or not the same is reasonable and proper according to the facts disclosed before the Board, that is to say, whether or not its decision is supported by substantial evidence or is arbitrary or capricious, or beyond the power of the Board to make, or whether it violates any constitutional right of the complaining party."

The concurring opinion of Justice Griffith considers the question of the power of the Court and of the type of evidence which may be presented, concluding as follows:

> "The result is the conclusion that the legislature could not confer upon either of the said judicial courts the original authority in either respect above mentioned, and since it could not do so directly, it could not do so by the indirect device of a trial de novo on appeal; and thus there is the further result that all the authority which could be conferred on the courts would be of a review to determine whether the Oil and Gas Board in its order acted within the authority conferred on it by statute, and if so, then whether in making its order it did so upon facts substantially sufficient to sustain its action.
>
> "The essential nature of such a review is such that it must be of what the Board had before it at the time it made its order. It would be an incongruity as remarkable to permit another different record to be made up on appeal to the circuit court as it would be to allow another and a different record to be presented to this Court on an appeal to it. The question is, and must be, what did the Oil and Gas Board have before it, and all this the majority opinion has well and sufficiently pointed out.

> "But what the Oil and Gas Board had before it is best and most dependably shown by a certified transcript made by a competent person in precise duplication of what was there heard and what there transpired. It is an incongruity in merely another phase which omits such a transcript, and thereafter would call witnesses to prove what was heard by and what transpired before the Board, as is allowed to be done by the reversal in this case..."

It appears to us that these cases, particularly the last one which involved an appeal from a board similar to our Oil Conservation Commission, clearly reflect that the most recent decisions leave to the administrative bodies the discretion which has been given them by the Legislature, and that the courts confine themselves solely to the question of whether there is substantial evidence in the record before the Commission on which the Commission's decision can be based, or, in other words, whether the administrative body acted arbitrarily. It further appears that since this substantial evidence rule is the basis for the extent of review, the transcript of evidence before the Commission is the only evidence which can logically be considered.

New Mexico Law Concerning Appeals and Reviews Of Orders Of Administrative Bodies

We come now to the New Mexico law concerning appeals from reviews or orders from administrative bodies, which we consider to bear out our position as to the power of this court to review a decison of the Oil Conservation Commission. As has heretofore been stated, the pertinent provision of the Constitution of New Mexico is contained in Section 1, Article III and is as follows:

> "The powers of the government of this state are divided into three distinct deparments, the legislative, executive, and judicial, and no person or collection of persons charged with the exercise of powers properly belonging to one of these departments, shall exercise any powers properly belonging to either of the others, except as in this constitution otherwise expressly directed or permitted."

Until rather recent years, the cases in New Mexico concerning the powers of the courts to review decisons of administrative bodies have been confined primarily to appeals from the action of the State Corporation Commission. The Constitution of New Mexico is unique in that it contains the provision for the powers of the Corporation Commission and further provides for removal of matters covered by the constitutional provision to the Supreme Court of New Mexico, and:

> "In the event of such removal by the company, corporation or common carrier, or other party to such hearing the Supreme Court may, upon application in its discretion, or of its own motion, require or authorize additional evidence to be taken in such cause; but in the event of removal by the commission, upon failure of the company, corporation, or common carrier, no additional evidence shall be allowed.....
>
> ".....the said court shall have the power and it shall be its duty to decide such cases on their merits, and carry into effect its judgments, orders, and decrees made in such cases, by fine forfeiture, mandamus, injunction and contempt or other appropriate proceedings."
>
> (Article II Section 7 Constitution of New Mexico)

As the functions and duties of the Corporation Commission have grown, it has become necessary to enact a statute supplementing the Constitution, which provides in effect that a motor carrier being dissatisfied with an order of the Commission, which order is not removable directly to the Supreme Court under the constitutional provisions, may:

> "Commence an action in the district court for Santa Fe County against the Commission as defendant, to vacate and set aside such order or determination, on the ground that it is unlawful or unreasonable. In any such proceeding the court may grant relief by injunction, mandamus or other extraordinary remedy....."

The Statute further provides that:

> "The same shall be tried and determined as other civil actions without a jury."
>
> (New Mexico Statutes 1941 Annotated 68-1363)

It should be borne in mind that some of the cases cited are under the constitutional provision, and some are under the statutory provision.

The first case in New Mexico appears to be Seward v. D. & R. G. 17 N. M. 557, which was a proceeding under the constitutional provision, moving directly from the Commission to the Supreme Court. In this case the matter was removed by the Commission when the carrier refused to comply with the order, and the court refused to allow additional evidence under the Constitutional provision. The Attorney General took the position that the Supreme Court had a right to form its independent judgment in the matter and was not confined to a consideration of the reasonableness and lawfulness of the order of the Commission. He based his position upon the language in the statute quoted above, that the court shall have "the power and it shall be its duty to decide such cases upon their merits." The Supreme Court had this to say:

> "Now if the contention is sound then the provision just quoted invests this court with legislative power to fix rates. There is no doubt but that the people of the state, by constitutional provision could confer such power upon the judges of the Supreme Court. If they saw fit they might combine all the power of government in one department, but such action would not be in accord with the settled policy of the states of the Union, where it has been the studied purpose to, so far as possible, keep separate the three great departments, and we should not so construe the provision as conferring legislative power upon this body, unless compelled to do so by clear and unmistakable language."

The court held that the only thing to be decided upon the appeal by the Commission was the reasonableness and lawfulness of the order, and they concluded that if the court finds the order reasonable and lawful, it enters a judgment to that effect, but if it finds it unlawful and unreasonable, it refuses to enforce it and the State Corporation Commission may proceed to form a new order under its rule.

This proposition was further discussed in Seaberg v. Raton Public Service Co. 36 N. M. 59; 8 P. 2d 100, in which the petitioner had removed a matter before the Corporation Commission directly to the Supreme Court, and the Corporation Commission filed a motion to dismiss. The facts of the case are not particularly pertinent to the present question, but some of the language of the court indicates the position which it was quick to take in these matters. We quoted from the case as follows:

> "The proceeding of removal is not for the review of judicial action by the commission. It is to test the reasonableness and lawfulness of its orders. The function of the commission is legislative; that of the court, judicial. The commission is not given power to enforce any order; it being merely a rate-making or rule-making body, doing what, if there were no commission, the Legislature alone could do. The court, on the other hand, can make no rate or rule, since it lacks the legislative power."

Perhaps the most complete discussion of the matter arose in the case of Harris v. State Corporation Commission 46 N. M. 352 P. 2d. 323, which was an appeal under the statute to the district court of Santa Fe County. The carrier had been granted a certificate and another carrier, adversely affected, appealed to the district court. The appeal to the district court was taken by way of a complaint filed by the protestant. At the trial, the plaintiff, instead of introducing the record of the hearing before the Commission, introduced new evidence by way of testimony of seven witnesses.

Upon conclusion of the evidence the court made many findings contrary to those of the Commission and concluded, as a matter of law, that the action of the Commission was unlawful and unreasonable. The first question discussed was the scope of judicial review provided for in the statute. The court goes into a rather exhaustive review of the New Mexico authorities and discusses several Law Review articles concerning the subject. Some of its concluding remarks are as follows:

> "When our Legislature enacted Ch. 154, L. 1933, it declared its purpose and policy to confer upon the Commission the power and authority to make it its duty to supervise and regulate the transportation of persons and propety by motor vehicle for hire upon the public highways of this state and to relieve the undue burdens on the highways, and to protect the safety, and welfare of the travelling and shipping public and to preserve, foster and regulate transportation and permit the co-ordination of transportation facilities...
>
> "Counsel for Appellee contends that in the removal of a cause pending before the Commission under Sec. 51, etc. of the Act, the trial before the District Court is a trial de novo. This view is repelled distinctly by what we said in the Seward Case.....
>
> "Even where statutes of other states have said that upon judicial review of administrative or legislative acts the trial shall be de novo, some courts have held such provision unconstitutional, others hold that the de novo provision is limited to the ascertainment by the court of whether the jurisdictional facts exist and whether there had been due process, and whether the Commission had kept within its lawful authority.
>
> "That question of constitutional right and power raised by administrative action must be tried de novo so that the court may reach its own independent judgment on the facts and the law without being bound by the rule of administrative finality of the facts and that additional evidence may be introduced so that these questions of constitutional right and power need not be decided on the administrative record alone, may be conceded."
>
> "We hold that the District Court erred in receiving and considering testimony other than that which had been produced at the hearing before the Commission."

The most recent case on this subject is New Mexico Transportation Co., Inc. v. State Corporation Commission, 51 N. M. 59; 178 P. 2d 580, in which the Commission affirmed the position taken in Harris v. State Corporation Commission, supra, and refused to disturb an order of the State Corporation Commission. The Court said:

> "Following the rules there announced, we are unable to say from an examination of the record that the order of the Commission granting these certificates was either unlawful or unreasonable. It is not sufficient that we might have reached a different conclusion."

This matter has also been discussed in general in cases arising out of the enforcement of the liquor laws of New Mexico by the Bureau of Revenue. Our statutes authorize the Commissioner of Revenue to establish a Division of Liquor Control and to appoint a chief of this division to administer the powers and duties of it.

(New Mexico Statutes 1941 Annotated, 61-501 to 61-525)

Among powers given to the Division of Liquor Control is the power to issue, revoke, cancel or suspend licenses.

There are different appeal provisions from orders referring to the issuance of licenses and those referring to cancellation or revocation of licenses. The provisions relative to appeal of orders concerning issuance of licenses are found in Section 61-516 of New Mexico Statutes 1941 Annotated. This section originally provided as follows:

> "Any person, firm or corporation aggrieved by any decision made by the chief of division as to the issuance or refusal to issue any such additional license may appeal therefrom to the district court of Santa Fe County, by filing a petition therefor in said court within thirty (30) days from the date of the decision of the chief of division, and a hearing on the matter may be had in the district court. Provided, however, that the decision of the chief of division shall continue in full force and effect, pending a reversal or modification thereof by the district court. "

In 1945 the provision was amended by adding the words "which hearing shall be de novo."

The section of the statute dealing with revocation and suspension of licenses, and appeals from such orders, in Section 61-605, New Mexico Statutes 1941 Annotated, which provides, among other things, that:

> "The matter on appeal shall be heard by the judge of said court without a jury, and such court shall hear such appeal at the earliest possible time granting the matter of the appeal a preference on the docket. The judge, for good cause shown may receive evidence in such proceedings in addition to that appearing in the record of hearing and shall act aside and void any order or finding which is not sustained by, or has been overcome by, substantial, competent, relevant and credible evidence."

This section of the statute has not been amended to provide for a de novo hearing.

In the case of Floeck v. Bureau of Revenue, 44 N. M. 194; 100 P. 2d 225, an appeal was taken under the section relating to cancellation of a liquor license, Section 61-605 New Mexico Statutes 1941 Annotated. Some question was raised as to the Constitutionality of the liquor control act, but the court did not pass upon that question. It did, however, have this to say:

> "Assuming the constitutionality of Sec. 1303, it did not undertake to vest in the district court the administrative function of determining whether or not the permit should be granted. It gave the court authority only to determine whether upon the facts and law, the action of the Commissioner in cancelling the license was based upon an error of law or was unsupported by substantial evidence or clearly arbitrary or capricious. (Ma-King Products Co. v. Blair, 271 U. S. 479, 46 S. Ct. 544, 70 L. Ed. 1046); otherwise it would be a delegation of administrative authority to the district court in violation of the Constitution. Bradley v. Texas Liquor Control Board, Tex. Civ. App., 103 S. W. 2d 300; State v. Great Northern Ry. Co. 130 Minn. 57, 153 N. W. 247, Ann. Cas. 1907B, 1201.
>
> "The New Mexico Liquor Control Act is an exercise of the police power of the state, for the welfare, health, peace, temperance and safety of its people. It prescribes the terms and and conditions upon which licenses shall be issued and the grounds and procedure for their cancellation; all of which are made purely administrative."

Apparently the question was not raised in this case as to the introduction of new evidence.

However, in the case of Chiordi v. Jernigan 46 N. M. 396; 129 P. 2d 640 this same statute was under consideration. After revocation of his license, a licensee appealed to the district court of Santa Fe County. In discussing the authority or jurisdiction of the district court, the Supreme Court had this to say:

> "No provision is made on appeal for trial de novo, and jury trials are specifically excluded. It is provided that the judge for good cause shown may receive additional evidence. It is obvious that he must review the evidence taken in the hearing before the Chief of Division. As the trial is not de novo the Chief of Division's decision on the facts must be reviewed as he heard it, and and it could not be if additional evidence was authorized upon the question of whether appellee was the party in interest. It is our conclusion that the new evidence which may be admitted must be confined to questions of whether the Chief of Division acted fraudulently, capriciously or arbitrarily in rendering his decision. Ma-King Products Co. v. Blair, supra; Floeck v. Bureau of Revenue, supra; Texas Liquor Control Board v. Floyd, supra.
>
> "The proceedings before the Chief of Division, while quasi judicial, were esentially administrative. The questions before the district court and here, are questions of law. They are, whether he acted fraudulently, arbitrarily or capriciously in making his order, and, whether such order was supported by substantial evidence, and generally,

> whether the Chief of Division acted within the scope of the authority conferred by the liquor control act."

It should be noted that some of the conclusions appear here to be based upon the fact that there is no provision for a trial de novo under this section of the statute.

It may have been this language which prompted the Legislature of 1945 to insert in Section 61-[illegible] New Mexico Statutes 1941 Annotated, which is the section dealing with appeals refusing to issue licenses, the de novo provision. As has been noted above, however, this provision was not inserted in Section 61-605.

In the recent case of Yarbrough v. Montoya, 214 P. 2d 769, the Supreme Court of New Mexico was called upon to pass upon the effect of the insertion of the de novo provision in Section 61-516, New Mexico Statutes 1941 Annotated. As will be recalled this de novo provision was inserted after the Floeck and Chiordi cases were decided. The Court again called attention to the fact that the Chief of the Liquor Division is given wide administrative judgment and discretion with respect to new licenses, and that the statute does not provide for formal hearing, and there is no requirement that he may only consider evidence that would be admissible in a court hearing. There is likewise no limitation upon evidence before the Oil Conservation Commission. The Court, in concluding that the de novo provision does not change the fundamental proposition of limitation of judicial review, had this to say:

> "We are further committed to the doctrine that the courts may not overrule the acts of administrative officers on matters committed to this discretion unless their actions are unlawful, unreasonable, arbitrary, capricious, or not supported by evidence."

The Court said further:

> "The applicant says this rule no longer obtains since the provision for a hearing de novo was written into the liquor law in 1945. A sufficient answer to this contention is found in Floeck case, supra, where in speaking of the powers of the District Court on appeal under the 1937 liquor act, we said: 'Assuming the constitutionality of Sec. 1303, it did not undertake to vest in the district court the administrative function of determining whether or not the permit should be granted. It gave the court authority only to determine whether upon the facts and law,

> the action of the Commissioner in cancelling the license was based upon an error of law or was unsupported by substantial evidence or clearly arbitrary or capricious (Ma-King Products Co. v. Blair, 271, U. S. 479, 46 S. Ct. 544, 70 L. Ed. 1046); otherwise it would be a delegation of administrative authority to the district court in violation of the Constitution.'
>
> "See also the case of Harris v. State Corporation Commission, 46 N. M. 352, 129 P. 2d 323."

It is true that the statutes for appeal from orders of the Commissioner of Public Lands, Section 8-867 New Mexico Statutes, 1941 Annotated, provide for trials de novo, but we find no cases in which the question of extent of review was raised.

CONCLUSIONS

Based upon the decisions and authorities cited, it is the position of Texas Pacific Coal and Oil Company that the nature and scope of the review by this Court of orders of the Oil Conservation Commission, including the question of what evidence may be presented, is limited as follows:

1. In view of the apparent attempt to delegate non-judicial functions to this Court, the review provisions of the statute are unconstitutional unless limited by the Court to the affirming or vacating of the order of the Commission.

2. This Court is limited upon review to a determination of whether the action of the Commission was unsupported by substantial evidence or was clearly arbitrary or capricious.

3. In making this determination this Court cannot pass upon the Commission's action unless it limits itself to the transcript of evidence before the Commission.

Respectfully submitted,

ATWOOD, MALONE & CAMPBELL

By_____

EUGENE T. ADAIR

Attorneys for Protestant,
Texas Pacific Coal & Oil Company.

IN THE DISTRICT COURT OF LEA COUNTY

STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191	))))))	Case No. 8485

PRETRIAL ORDER

This matter having come on for hearing at pretrial conference at 9:00 a.m. on May 29, 1950 in the Court Chambers at the Courthouse of Roswell, New Mexico, pursuant to the provisions of Rule 16 of the Rules of the District Courts of the State of New Mexico, upon notices duly given to all parties, it was stipulated in open Court that said pretrial conference would be held beforethe Court at Roswell, New Mexico, in lieu of the conference being held in Lea County, New Mexico. Petitioner Amerada Petroleum Corporation was represented by Clarence E. Hinkle for Hervey, Dow & Hinkle, Roswell, New Mexico, and Booth Kellough of Tulsa, Oklahoma, its attorneys of record. Respondent Texas Pacific Coal & Oil Company was represented by Jack M. Campbell and Ross L. Malone, Jr. for Atwood, Malone & Campbell, Roswell, New Mexico, and Eugene T. Adair, Fort Worth, Texas, its attorneys of record. Respondent Oil Conservation Commission of New Mexico was represented by Don G. McCormick, Special Assistant Attorney General and George A. Graham Special Assistant Attorney General, two of its attorneys of record. The following proceedings were had:

1. Respondent Texas Pacific Coal & Oil Company, joined by Respondent Oil Conservation Commission of New Mexico, under paragraphs numbered 1 and 4 in the Notice of Pretrial conference

raised the question of the extent of the scope of the review by the Court of the order appealed from and presented argument that the Court in its review was limited to a determination of whether there was substantial evidence in the record before the commission to sustain its order. Petitioner requested additional time to submit a brief to the Court upon the question and pursuant to such request the pretrial conference was recessed pending furnishing of briefs by the parties and a determination by the Court as to the question raised.

2. Briefs having been submitted pursuant to instruction by the Court, the pretrial conference was resumed at Roswell, New Mexico, on September 11, 1950 at 1:30 p.m. due notice having been given to all parties. Petitioner Amerada Petroleum Corporation was represented by Clarence E. Hinkle for Hervey, Dow & Hinkle, Roswell, New Mexico, and Booth Kellough of Tulsa, Oklahoma, its attorneys of record. Respondent Texas Pacific Coal & Oil Company was represented by Jack M. Campbell and Ross L. Malone, Jr. for Atwood, Malone & Campbell, Roswell, New Mexico, and Eugene T. Adair, Fort Worth, Texas, its attorneys of record. Respondent Oil Conservation Commission of New Mexico was represented by George A. Graham, Special Assistant Attorney General, one of its attorneys of record.

3. The Court having considered the briefs submitted by the parties and having heard argument of counsel as to the scope and extent of the review by the Court of the order of the Oil Conservation Commission in accordance with its letter to counsel dated August 4, 1950, ordered: (finds)

1. That the Oil Conservation Commission of New Mexico is primarily an administrative body with certain delegated legislative powers; and that in entering the order complained of in the Petition for Review the Commission was acting in that capacity.

2. That this Court is without power to substitute its own independent judgment for that of the Commission as reflected in the Order complained of.

3. That the nature and scope of the review in this case will 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.

4. A transcript of the proceeding before the Commission including the evidence taken in a hearing or hearings by the Commission shall be received in evidence by the Court in whole or in part upon offer by either party, subject to legal objections to evidence.

5. Evidence in addition to that contained in the transcript of the proceedings before the Commission will be limited to
(a) such matters as to which legal objections are made and sustained to evidence thereon appearing in the transcript of the proceedings before the Commission; and
(b) facts bearing upon the question of whether or not the Order of the Commission was arbitrary, capricious or unreasonable, or whether the Commission acted beyond its power.

6. With reference to sub-paragraph (a) of paragraph No. 3 above set forth and in order that there may be no confusion or misunderstanding as to the meaning of said sub-paragraph, you are specifically informed that the Court does not look with favor upon the proposition urged under point "V" of Petitioner's memorandum brief filed with the Court, being the contention that the ultimate fact was a jurisdictional one which could be heard de novo, and that the Court will not permit the introduction of evidence based upon the proposition that the action of the Commission with reference to the application under consideration by it was one of jurisdiction or power but that it was an action involving the exercise of discretion and judgment only.

4. Petitioner Amerada Petroleum Corporation excepted to all of the aforesaid order and Respondent Texas Pacific Coal & Oil Company excepted to that portion of the order which provided that the evidence taken in a hearing before the commission was subject to legal objections before the Court and that additional

evidence might be heard upon such matter as to which legal objections are made. Petitioner Amerada Petroleum Corporation then by written motion moved the Court to dismiss its appeal without prejudice. The Texas Pacific Coal & Oil Company resisted the motion on the ground that any dismissal of the appeal should be with prejudice. The Commission offered no objection to the motion. The Court having heard argument of counsel and having fully considered the matter announced that it would dismiss the case with prejudice but deny the motion to dismiss without prejudice, whereupon counsel for Petitioner stated that it would proceed with the trial of the matter unless a dismissal without prejudice were granted. The Court announced it would enter its order denying the motion to dismiss without prejudice.

5. It was agreed by all parties that subject to the exceptions hereinafter noted the transcript of testimony and the exhibits attached thereto at the hearing before the Oil Conservation Commission would be received in evidence without objection. The following exceptions were agreed upon.

(a) It was agreed and stipulated between the parties that Respondent Texas Pacific Coal & Oil Company's Exhibit "G" and all testimony relating thereto would not be considered by the Court.

(b) It was further agreed and stipulated between the parties that Respondent Texas Pacific Coal & Oil Company's Exhibit "F" and testimony relating thereto would be considered by the Court only to the extent that such exhibit and testimony might tend to prove the impracticability and lack of feasibility of such pooling as might be required under the order sought by Petitioner.

(c) It was further agreed and stipulated between the parties that a schedule of mineral, leasehold and royalty ownership under leases of Petitioner Amerada Petroleum Corporation could be included and made a part of the transcript of record to

be considered by the Court as showing such mineral, leasehold and royalty ownership as reflected by the files of Amerada Petroleum Corporation on the dates shown in the schedules.

6. It was further agreed and stipulated between the parties that Petitioner Amerada Petroleum Corporation could prepare a written motion by which it might tender proof setting out such matters as authorized under the Rules of Civil Procedure if the matter were tried in open Court, specifically identifying witnesses and the matters concerning which they would testify, the motion to be submitted to counsel for Respondents Texas Pacific Coal & Oil Company and Oil Conservation Commission of New Mexico before filing for approval with the Court.

7. Respondent Oil Conservation Commission of New Mexico withapproval of the Court and without objection filed a copy of the transcript of testimony before the Oil Conservation Commission, including all exhibits, as a part of its answer to the petition. It was stipulated and agreed between the parties that copies of the records before the Commission might be used and considered by the Court in lieu of original records.

8. Respondent Texas Pacific Coal & Oil Company objected to paragraph 6 (d) of the petition on the ground that the assignment of error was too general in its nature to be considered by the Court. Petitioner agreed to delete this paragraph with the understanding that it would not prejudice petitioner's right to raise jurisdictional questions and the Court so ordered.

9. It was stipulated and agreed that the following typographical errors in the transcript would be corrected and considered by the court as corrected:

(1) At page 29 of the transcript on the thirteenth line from the top of said page commencing with the semicolon

the clause should read "the royalty owner wants" etc.

(2) At page 41 of the transcript in the fifteenth line from the top of said page the word "prove" should be changed to the word "pool".

(3) At page 53 of the transcript in the first line thereof the word "flat" should be changed to the word "flank".

This order is entered pursuant to and in compliance with Rule 16 of pretrial procedure of the rules of civil procedure of the District Courts of the State of New Mexico and will control the subsequent course of this action.

s/Geo. T. Harris
District Judge

Done this 21st day of December, 1950.

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

The following proceedings before the Oil Conservation Commission, State of New Mexico, came on pursuant to legal notice of publication, and at the time and place as set out below.

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, of the following public hearing to be held December 20, 1949, beginning at 10:00 o'clock A.M., on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

STATE OF NEW MEXICO TO:

All named parties in the following cases, and notice to the public;

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼, Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico. This is a readvertisement.

Case 207

In the matter of application of Stanley L. Jones, Inc., a New Mexico Corporation, for an order approving an unorthodox location for Stanley L. Jones, Inc., State No. 13, 338 feet south of the north line and 73 feet west of the east line NE¼NE¼NE¼ of Section 23, Township 18 South, Range 27 East, N.M.P.M., in the Artesia pool, Eddy County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
R. R. SPURRIER, SECRETARY

SEAL

I N D E X

WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
John A. Veeder	7	20	44	46
R. S. Christie	15	48	60	61
G. R. Carter	64	81	89	
R. G. Schaehle	91			
REBUTTAL				
C. V. Millikan	96	100		

EXHIBITS

NUMBER			IN EVIDENCE
Applicant's Nos. 1 & 2			Page 9
"	"	3 & 4	43
Tex.-Pac. Exhibit		"A"	22
"	"	"B"	65
"	"	"C", "D", "E", "F", "G"	68
"	"	"H"	69
"	"	"I", "J", "K", "L"	70
"	"	"M"	72
"	"	"N"	73
"	"	"O"	74
"	"	"P"	81
"	"	"Q"	95

BEFORE: Hon.Guy Shepard, Chairman

Hon. R. R. Spurrier, Secretary and Member

REGISTER:

Don G. McCormick, Carlsbad, N.M., for Oil Conservation Commission.

George A. Graham, Santa Fe, N.M., for Oil Conservation Commission.

Booth Kellough, Tulsa, Okla., for Amerada Petroleum Corporation.

J. O. Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

Oliver Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

R. S. Christie, Ft. Worth, Texas, for Amerada Petroelum Corporation.

John A. Veeder, Midland, Texas, for Amerada Petrdeum Corporation.

C. V. Millikan, Tulsa, Oklahoma, for Amerada Petroleum Corporation.

Eugene T. Adair, Ft. Worth, Texas, for Texas-Pacific Coal & Oil Company.

Jack M. Campbell, Roswell, N.M., for Texas-Pacific Coal & Oil Company.

G. H. Carter, Midland, Texas, for Texas-Pacific Coal & Oil Company.

R. G. Schaehle, Midland, Texas, for Texas-Pacific Coal & Oil Company.

Foster Morrell, Roswell, N.M., for U.S.G.S.

J. H. Crocker, Tulsa, Oklahoma, for Mid-Continent Petroleum Corporation.

Glenn Staley, Hobbs, N.M., for Lea County Operators.

Roy O. Yarbrough, Hobbs, N.M., for Oil Conservation Commission.

Robert C. Anderson, Roswell, for Malco Ref. Inc.

Howard Jennings, Roswell, N.M., for Malco Ref. Inc.

Elmer A. Utz, Santa Fe, N.M., for Oil Conservation Commission.

E. E. Kinney, Artesia, N.M., for N.M. Bureau of Mines.

Hon. Thos. J. Mabry, Santa Fe, N.M., for Oil Conservation Commission.

COMM. SHEPARD: The meeting will come to order.

There has been a request made that Case 207 be continued until 10 o'clock on the morning of the 27th, and the record will show, without objection, that it has been continued to that time.

At this time we will take up Case 191. Will you read it, Mr. Graham, please?

(Reads the notice of publication in Case No. 191).

MR. KELLOUGH: My name is Booth Kellough. I am attorney for Amerada Petroleum Corporation. I believe it would be helpful to make a very brief statement of our position in this case before we come to our evidence.

This is Amerada's application for a proration of units and uniform spacing of wells in the pool which has been denominated as the Bagley Pool in Lea County. Our request is for 80-acre proration units and a uniform spacing pattern.

The probable productive limits of this pool have been delineated by our geologist and the request is for the location of the units that they comprise, the W½ and the E½ of each quarter section; that is, they run north and south, with certain -- I believe about eight exceptions, running each and west, which we are recommending, due to the ownership conditions.

We are also asking for a uniform pattern for the spacing of wells whereby the wells will be located in the northwest 40-acre tract, or the NW¼ and the SE¼ of each quarter section. In order to clarify that statement, each quarter section of 140 acres will be divided by a line running north and south, making the west units and the east units, the wells to be located in the NW¼ and the SE¼. Now, that is the pattern which we are asking for.

The discovery well was the BTA Well. It was drilled to a depth of approximately -- well, put it this way: I believe our evidence would show it producing at a depth of approximately 10,000 feet. and our evidence will further show that the well cost in the neighborhood of $312,000.00 to drill t he discovery well. Our evidence will further show that the estimated cost of future wells in the area will be approximately $225,000.00.

Not only because of the deep pool and the expensive wells, but our application for 80-acre proration units is based upon the belief -- and we are satisfied that our evidence will support it -- that this is a reservoir of very good quality and it has an effective water drive, so that one well will adequately and economically drain at least an area of 80 acres. Our evidence will further show that this pool is analogous to other pools in the area which have been successfully produced on 80 acres.

There is one particular point that I wish to call the Commission's attention to, with reference to our spacing pattern. It will be our recommendation that if an order is granted as we request, that it provide that the Commission for good cause shown, may grant an exception to the spacing pattern for a well to be located off of the pattern for structure or other reasons, suitable to the Commission, in which event, the allowable for the well will be reduced, the amount of the reduction to be determined by the Commission on the evidence produced at a hearing.

In other words, it is our thought that in order to assure all of the owners a recovery of their fair share of the oil from their reservoir, that it should be developed on the 80-acre spacing -- well spacing pattern, which we recommend, with the provision that the exceptions be granted, but in the event they

are granted, the Commission should then look at the evidence and determine to what extent the allowable should be cut in order that the party making the off-pattern location will not obtain an undue advantage over his neighbor.

There are other operators in this area. In addition to Amerada, there is the Gulf and the Phillips and the Mid-Continent and the Texas and Pacific Coal & Oil Company. We are informed that the Gulf and the Mid-Continent and the Phillips are favorable to our application. It is our belief that when we lay the evidence before this Commission, that you will agree that this pool should be developed on 80-acre units with a uniform spacing pattern.

MR. CAMPBELL: May it please the Commission --

MR. SHEPARD: Give your name please.

MR. CAMPBELL: Jack M. Campbell, representing Texas and Pacific Coal and Oil Company. Before the first witness is called, and without the thought of trying to suggest to the applicant how or when to present his case, we feel that the opening statement should include, for the benefit of the Commission and other operators and royalty owners interested, a statement -- or that the first witness should definitely make a statement as to what type allowable is to be requested for the 80-acre proration unit, that is, whether it will be the present 40-acre top unit allowable, as in previous order, or whether there is to be some change.

I also feel -- perhaps I missed it in the opening statement -- that the Commission should know and the interested parties should know if the proposed locations within the quarter sections suggested, are to be in the center, or if there is to be some leeway requested when the ultimate request by

the applicant is before this Commission.

MR. KELLOUGH: On the last point first, our application -- the one we filed provides that the well location should be in the center of the particular quarter section involved, with a tolerance of 150 feet in any direction for surface obstructions, in order to avoid surface obstructions.

Now, as to Mr. Campbell's request as to the manner in which we present our case, I only have this to say: that we will present to the Commission all of our evidence, and I am sure they will have ample opportunity to examine any of our witnesses on proper subjects, and I believe that any of his doubts as to our position will probably be settled by our evidence; so with the permission of the Commission, we will proceed with the evidence in this case.

COMM. SHEPARD: Call your first witness, please.

MR. KELLOUGH: I don't believe they have been sworn.

COMM. SHEPARD: Mr. Graham, will you swear them, please.

JOHN A. VEEDER

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Kellough:

Q Will you please state your name to the Commission?

A John A. Veeder.

Q Where do you live, Mr. Veeder?

A Midland.

Q And by whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Assistant District Geologist.

Q How long have you been a geologist for Amerada?

A Thirteen years.

Q Have you previously testified before this Commission in the capacity of a geologist on geological matters?

A I have.

Q Mr. Veeder, are you familiar with the Amerada B.T.A. No. 1 Well located in the center of the NW¼SE¼, Section 2, Township 12 South, Range 33 East, Lea County, New Mexico?

A I am.

Q I hand you what has been marked as Applicant's Exhibit No. 1, and ask you to state, please, what that is?

A This is the outlined area of Bagley Area, in which we would recommend our required or designated spacing.

Q This map then shows by the red line the area asked to be covered by the spacing order in this application, is that correct?

A That's right.

Q The map also shows the location of the wells drilled on the Devonian formation, is that right?

A That is right.

Q And does it also show the wells drilled on the Pennsylvanian formation?

A That is so.

Q Now, that is indicated on the exhibit itself, is it not?

A That's right. The Pennsylvanian wells are two of them and they are marked, designated on the map by the smaller circle.

Q And the map further shows the proposed location of any wells which might be drilled on the pattern asked for in our application?

A That's right.

Q Now, those are indicated by a cross, is that correct?

A Right.

Q The map further shows the location of the units by dotted line, which do not conform to the W½ or the E½ of the quarter sections, is that right?

A That is right.

Q Do you have the Schlumberger of the B.T.A.? Thank you. Will you mark this please? (Done).

I hand you what has what has been marked, Applicant's Exhibit No. 2, and ask that you please state to the Commission what this instrument is?

COMM. SHEPARD: Exhibit No. 1 and No. 2, will be received and admitted in evidence.

(Applicant's Exhibits Nos. 1 and 2, received in evidence).

Q (By Mr. Kellough) Will you state to the Commission what that is and what it shows?

A That is Schlumberger of the Amerada No. 1, State B.T.A. Schlumberger is marked at the top from the Mississippian on down to the basic and these are Schlumberger tops.

Q Do you have Schlumbergers on any other of Amerada's wells which have been supplied in this Bagley?

A I have Schlumbergers on the Amerada No. 1, State B.T.A. and B.T.C.

Q Now I hand you what has been marked Applicant's Exhibit No. 3, and ask you to please state to the Commission what that instrument is and what it shows.

A This well is also in Schlumberger electrical log under said well, showing the top of the formation, and also the section below in the Devonian from which we are producing.

Q Do you have any other Schlumberger on any other wells drilled

by Amerada?

A I have one other Schlumberger, the Amerada State B.T.D

Q Now, Mr. Veeder, I hand you what has been marked Applicant's Exhibit No. 4, and ask you to state to the Commission what that instrument is and what it shows.

A This is also a Schlumberger electrical log on the Amerada No. 1, State B.T.D., which is also a Devonian producer. On the log we have marked the top of the Devonian.

Q When was the discovery well, B.T.A. No. 1 completed?

A The B.T.A. was completed June 16, 1949.

Q Did that well discover, in your opinion, a new reservoir, or a new common source of supply not heretofore producing?

A It did.

Q What is the producing formation in that well?

A The producing formation in Amerada No. 1, State B.T.A., is the Devonian.

Q Will you please give to the Commission the detailed description of how that well was completed?

A The Amerada No. 1, State B.T.A. was drilled on the Devonian, which was topped at 10,734. Drill stem tests were taken in the Devonian where we had flowing oil production. The well cemented casing, that is 5½ inch casing at 11,200, and continued to drill the rest of the section above the basement. Those tops below the Devonian were called as follows: -- and these are Schlumberger tops. The top Montoya was called at 11,344; the top of the Simpson at 11,604; the top of the Ellenberger, 11,670; and the top of the basement, 11,709; a total depth of 11,766 was reached.

This well was then plugged back, casing perforated in the Devonian at 11,000 to 11,015. The drill stem test was taken

which was opened 8½ hours with a recovery of 4,000 feet of oil plus 640 feet of salt water. The perforations were squeezed with cement and the casing was re-perforated 10,950 to 965. This well was then acidized with 250 gallons of acid and was completed for i.p. of flow 400 barrels of oil and 5½ hours, that is, through 1/2 inch choke, gas-oil ratio of 28 to 1; gravity of oil 44.4.

I would like to make a correction on the completion date. That was 7-26-49.

Q You mean, July 26, 1949?

A July 26, 1949, right.

Q What in your opinion is the top of the pay section?

A The top of the pay section, we consider as 10,790 feet.

Q And what, in your opinion, is the base of the pay section?

A The base of the pay section would be at approximately 10,980, that is, 15 feet below the top of the perforations where we completed the well.

Q Mr. Veeder, the map marked --

MR. ADAIR (Interrupting): Excuse me. I wasn't followin g you; I didn't get your last statement as to the base of the pay section. Would you mind repeating that?

THE WITNESS: Well, the base of the pay section, we would consider as being 15 feet below the last perforations where we completed the well.

MR. ADAIR: In feet, what is that?

THE WITNESS: That would be 10,980.

Q (By Mr. Kellough): Mr. Veeder, Applicant's Exhibit No. 1 is a map of the area -- shows by a red line the area which is asked to be covered by this spacing application. Does that area represent the probable productive area of this producing formation?

A That is so, to the best of our knowledge at the present time.

Q This map further shows other wells drilled or now drilling in this area. Would you please, for the information of the Commission point out the other wells shown on the map and explain to the Commission the present status of those wells?

A Other wells in this area completed are the Amerada No. 1, State B.T.C., located in the SE¼SW¼, Section 35, 11 South, 33 East. This well reached a total depth of 10,980, with a Schlumberger call on the top of the Devonian as 10,662. The well was completed as follows: 7-5/8" casing at total depth, 10,980. Casing perforated 10,959 to 79 with 80 shots. Well completed with i.p. of flow at the rate of 1127 barrels of oil, 24 hours. Gas-oil ratio of 33 to 1 with a gravity of 46.2.

Another well completed by Amerada in this area is the Amerada No. 1, State B.T.D. This well is located in the SE¼SW¼, Section 2, Township 12 South, Range 33 East. This well reached a total depth of 10,995. We called the top of the Devonian at 10,870. Completion history as follows: Total depth 10,995; 5½" casing, 10,980; acid 500 gallons; i.p. flow 800 -- 929 barrels of oil in 24 hours and 1/2" choke; gas-oil ratio, 32 to 1, with a gravity of 45.5.

Q Now, any other wells which have been completed in this area?

A There is one other well completed for an oil well in the Devonian, which was completed by Texas-Pacific. This well is in the SE¼SE¼ of Section 2, Township 12 South, Range 33 East.

Q Now, will you point out to the Commission the wells which are now being drilled in this area?

A Those wells now drilling are the following: The Amerada No.2, State B.T.D., which is located in the NW¼SE¼, Section 35, 11 South,

33 East. This well is drilling in the Permian at a depth of 7,000 feet.

Amerada is also drilling No. 1, Simmons, located in the NW¼NW¼, Section 11, 12 South, 33 East. This well is also drilling in the Permian at 3685.

One further well drilling is a Texas and Pacific, No. 1, State C, which is located in the NW¼NE¼ of Section 2, 12 South, 33 East; and this well is also drilling in the Permian below 4,000 feet.

Q Now, there are two additional wells shown on the map by small dots. Will you describe those wells?

A The two wells shown as small dots are Permian wells. The one well is Mid-Continent No. 1, State 65, which is located in the SW¼NW¼ of Section 1, Township 12 South, Range 33 East.

The other well is the Amerada No. 1, Caudle. This well is located in the SE¼NE¼ of Section 10, 12 South, 33 East.

Q Then, neither of those wells is producing from the formation sought to be covered by this application, is that right?

A That is right.

Q Mr. Veeder, from the samples which you have seen from the wells just described, do you have an opinion with reference to the quality of this producing formation?

A I would say that from the samples and cores I have seen, I would say it had good porosity and apparently permeability.

Q Are you familiar with any other pools in the vicinity which are also producing from the Devonian formation?

A Similar pools, I would say, would be the Hightower Pool to the south; the Crossroads Pool; Jones Ranch Pool, and also the Knowles Pool.

Q Would you compare those pools which you have named, geolo-

gically with this Bagley Pool?

A I would say all pools are producing from the upper part of the Devonian.

Q Do the pools which you have named generally have the same type of porosity?

A All pools have what we would term as solution type porosity.

Q Mr. Veeder, does the production history of these other pools, as well as the information which you have from the wells in the Bagley Pool, substantiate your opinion that this is a reservoir of good porosity and permeability?

A That's right. Our completions to date would compare with wells in the other pools.

MR. KELLOUGH: That's all.

MR. ADAIR: Excuse me, Mr. Kellough --

COMM. SHEPARD: Give your name, please.

MR. ADAIR: Eugene T. Adair, representing the Texas-Pacific Coal and Oil Company. Mr. Kellough, do you intend to have this witness inform the Commission and other operators present, the allowable that you ask to be assigned to 80-acre units?

MR. KELLOUGH: Not by this witness, but we have another withess.

MR. ADAIR: If the Commission please, then, I request the Commission to defer my cross examination of this witness until that information is in the record.

COMM. SHEPARD: Granted.

MR. KELLOUGH: Mr. Christie, will you take the witness stand?

R. S. CHRISTIE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Kellough:

Q Will you please state your name to the Commission?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Ft. Worth, Texas.

Q And by whom are you employed?

A The Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Division Petroleum Engineer.

Q And how long have you been an engineer for Amerada?

A Since 1929.

Q Now, you have previously testified before this Commission in your capacity as an engineer, on engineering matters?

A Yes, sir.

Q Mr. Christie, you are familiar with the Amerada B.T.A. No. 1 well about which Mr. Veeder testified, are you not?

A Yes, sir.

Q Do you have any information with reference to the bottom-hole pressure of that well?

A Yes, sir.

Q Will you please give the Commission the information you have?

A The most recent bottom-hole pressure taken on the State -- Amerada State BTA No. 1 was taken in November, '49. The static bottom-hole pressure at that time was 4247 pounds. That was some four months after the well was completed. At the same time, we ran a 24-hour flow test on the well. It showed a production activity index of 4.5 barrels of oil per pound drop in the bottom-hole pressure, flowing at the rate of 50 barrels per hour.

Q Mr. Christie, is that a daily production activity index?

A That is a daily production activity index.

Q What, in your opinion, is the source of energy of this Bagley reservoir?

A Water drive.

Q What is the cost of the discovery well?

A The discovery well cost approximately $312,000.00.

Q And what, in your opinion, is the estimated cost of future wells?

A We estimate the average cost of future wells would be approximately $225,000.00.

Q Mr. Christie, do you have an opinion as to the area which may be effectively drained by one well from this reservoir?

A In my opinion, one well will adequately drain 80 acres -- at least 80 acres.

Q Then, in your opinion, a proration unit of 80 acres, or one-half of a quarter section, would represent that area which may be efficiently and economically developed by one well, is that correct?

A That is right.

Q And you recommend to this Commission that a proration unit of 80 acres be established for this pool, is that right?

A Yes, sir, I do.

Q Now, will you state to the Commission what recommendations you have with reference to the location of the various units in the area; and will you please take Exhibit No. 1, the map, and point out to the Commission in brief, the location of those units?

A In the whole area?

Q Yes, not by description, but simply tell the Commission how you recommend that the units be established in this area.

A We would recommend that the wells be drilled in the center of the Northwest 40, and the Southeast 40, of each quarter section.

Q Now, what is -- let me put it this way: Do you recommend then, that the 80-acre units comprise the East half and the West half of each quarter section?

A Yes, sir, with the -- except where it is necessary to make exceptions.

Q And the dotted line on the map shows the exceptions which you are recommending?

A That's right, yes, sir.

Q Do you have any recommendation to make with reference to the Mid-Continent well located in the SW¼NW¼ of Section 1, 11 South, Range 33 East?

A If the Mid-Continent No. 1 State well should be carried to the Devonian, we would suggest that be made an exception to the spacing pattern because the well was started prior to the completion of the discovery well in the pool.

Q Now, do you have any recommendation with reference to the future off-pattern wells which may or may not be granted by the Commission?

A Well, it would seem reasonable that if a well is located off-pattern, that the well should be penalized in the allowable, and cut to some extent determined by the conditions surrounding that particular tract, which will be brought out in evidence, I presume, at an open hearing if our request is granted.

Q It is your recommendation, then, that reduction in the allowable be not any fixed formula, based upon surface acreage for smaller units, or that it neither be based upon necessarily productive or non-productive acreage in the unit; but it is your

recommendation that in the event there is an off-pattern well drilled, that the Commission, from the evidence submitted, determine to what extent the allowable should be reduced? Is that a correct statement of your recommendation?

A That is correct. I think each well presents a separate problem of its own.

Q Now, Mr. Christie, what recommendation do you have with reference to allowables?

A Until such time as we have sufficient reservoir history and producing history of the reservoir, we would recommend the top 40-acre allowable, with the deep-pool adaptation. At this time, it would be approximately 197 barrels, I believe, for that depth.

Q Now, is it your further recommendation that regardless of the exact boundaries encompassed by this red line, that the order cover the reservoir or the common source of supply as it is developed?

A Yes, that is correct. I think the entire reservoir should be included in this spacing pattern if it develops there are tracts outside the designated area at this time.

Q Do you have any special field rules which you wish to recommend?

A No, we suggest the State-wide rules apply in this case.

Q But you do recommend a tolerance of 150 feet in any direction to avoid surface obstructions, is that correct?

A Yes, that is correct.

Q Mr. Christie, are you familiar with any other Devonian pools in this area which you may wish to compare with this pool?

A Yes, sir. I am familiar with the Hightower area and the Knowles area in New Mexico, and the Jones Ranch area in Texas, which is just across the Texas-New Mexico State line.

Q Now, those pools are being produced on 80 acres, is that correct?

A Yes, sir.

Q Will you describe in what way they are comparable, if they are comparable to this Bagley Pool?

A The Jones Ranch Pool is approximately four years old, and therefore we have a four-year-old history on that particular pool; and it also, as testified by Mr. Veeder, is a Devonian reservoir. The bottom-hole pressures reflect the Jones Ranch reservoir to be a water-drive field. The allowable is slightly higher than the allowable would be in wells of this depth in New Mexico, but there seems to be no particular damage to this reservoir producing at that rate and under that spacing pattern.

MR. McCORMICK: How deep is the Jones Ranch Pool?

THE WITNESS: The Jones Ranch Pool is between -- below 11,000 -- between eleven and twelve thousand feet.

MR. SPURRIER: What is the allowable?

THE WITNESS: The allowable is 240 barrels. Of course, we have a number of shut-down days, you know, over in Texas at the present time, so that the average allowable would probably be less than 197 barrels now, per day.

Q (By Mr. Kellough) Is it your opinion, Mr. Christie, from your experience with the Jones Ranch Pool, and also the information you have here, that the pool, this pool, should be developed on the uniform spacing pattern, with 80-acre units, which we are now recommending?

A I certainly think it would be desirable, yes, sir.

Q In your opinion, would that prevent the drilling of unnecessary wells, and prevent waste?

A Yes, sir, it would.

MR. KELLOUGH: That's all.

MR. McCORMICK: Mr. Christie, how deep was the Amerada Caudle well in Section 10?

THE WITNESS: The original total depth?

MR. McCORMICK: Yes. Did you penetrate the Devonian? That's what I wanted to find out.

THE WITNESS: I believe Mr. Veeder could answer that more intelligently than I can.

MR. VEEDER: The total depth on the Caudle well was 11,083. We topped the Devonian at 11,008. We took a drill stem test from the top of the Devonian from 11,028 to 83. That drill stem test, open 4 hours, recovery 4410 feet of sulphur water, with no shoals of water.

MR. McCORMICK: How deep was Mid-Continent No. 1 in Section 1? Did it go to the Devonian?

THE WITNESS: No, it did not go to the Devonian.

MR. VEEDER: The total Mid-Continent was 3935, sir.

COMM. SHEPARD: Anyone want to cross examine?

MR. ADAIR: May I cross examine Mr. Veeder before I cross examine Mr. Christie?

COMM. SHEPARD: Yes.

CROSS EXAMINATION OF MR. VEEDER

Q (By Mr. Adair) Mr. Veeder, the tract upon which the discovery well in this area was drilled, or Amerada B.T.A. No. 1, was a farm-out from Texas-Pacific Coal and Oil Company, is that correct?

A I understand that is correct.

Q In other words, Texas-Pacific Coal and Oil Company assigned to Amerada its lease covering that 80-acre tract, and Amerada

obligated itself to drill a well, is that your understanding?

A That is my understanding.

Q In that farm-out, were there any restrictions made as to where you would drill your well on that tract?

A I can't say. I imagine there would be, but I can't testify as to the restrictions.

MR. ADAIR: Is there someone else here with Amerada who would like to answer that question if Mr. Veeder doesn't know? Mr. Millikan, do you know?

MR. MILLIKAN: I can't answer it. If you have the evidence there, perhaps you can put it in. I think the facts will stand on their own without expert testimony.

Q (By Mr. Adair) I hand you here a letter agreement between Amerada, which has been marked Texas-Pacific's Exhibit No. "A", and ask you, or any other Amerada representative present if they desire to examine that, and tell us whether or not that constitutes the farm-out agreement between Amerada and Texas-Pacific?

MR. KELLOUGH: Well, I wish to say to the Commission that we have produced here an engineering and a geological witness. This copy of a letter, which purports to be a farm-out agreement assigned by the Texas-Pacific Coal and Oil Company, is addressed to Amerada and was accepted by Amerada on October 13, 1949. I cannot say, and I can tell the Commission, I don't know whether it is the particular farm-out agreement, involving this lease, or not; but if Mr. Adair testifies it is, we have no objection to it's being introduced in evidence to show what it is. In other words, it may or may not be. If he says it is, I assume it is.

MR. McCORMICK: Does the T.P. so state?

MR. ADAIR: That is the only one we have with Amerada.

MR. McCORMICK: It will be accepted then.

MR. ADAIR: Covering this.

MR. McCORMICK: Yes.

MR. ADAIR: Without taking the time, if the Commission please, to read it, if I may state into the record, that this is the agreement and there are no restrictions as to where the well will be drilled on the 80-acre tract, nor are there any restrictions or provisions calling for 80-acre spacing. We request that it be received in evidence.

COMM. SHEPARD: It will be received.

(Tex-Pac. Exhibit No. "A" was received in evidence).

Q (By Mr. Adair) Now, Mr. Veeder, you testified as to the top of the Devonian, as to where you picked the tops in the various wells drilled?

A That's right.

Q Which is the highest well in the field from the standpoint of the top of the Devonian formation?

A The highest well in the field is the Amerada No. 1 State B.T.C. That well is located in the SE¼SW¼, Section 35, 11 South, 33 East.

MR. SPURRIER: Mr. Veeder, excuse the interruption. In describing these wells, let's cut out the exact description because from this sheet we have here, it is obvious which well you are talking about.

THE WITNESS: All right.

Q (By Mr. Adair) Now, the next highest well on the Devonian?

MR. MORRELL: If the Commission please, we can't hear. What was the top of the Devonian formation on the Amerada No. 1 State B.T.C.?

THE WITNESS: The Schlumberger top, our call on that was minus 6410.

MR. MORRELL: And the depth was --

THE WITNESS (Interrupting) That equivalent depth would be 10,662.

Q (By Mr. Adair) And the next highest well on the Devonian formation in the field was what?

A The next highest well on the Devonian in the field, on our Schlumberger correlations would be the Texas and Pacific No. 1, State B.

Q Would you give the top again on it?

A Our calling on that well would be a minus 6479.

Q So looking at your figures here, your B.T.C. is approximately 69 feet higher on the Devonian than the Texas-Pacific No. 1, State B well?

A That's right.

Q Now, the next highest well on the Devonian field?

A The next highest well would be the discovery well, Amerada No. 1, State B.T.A.

Q And the subsea datum on that is what?

A Minus 6495.

Q And the next highest well in the field -- that only leaves one, excuse me, the B.T.D. That is the next, is that correct?

A That's right.

Q What is the subsea datum on that?

A The subsea datum on that is minus 6620.

Q Mr. Veeder, you have picked the top of the Devonian right at the bottom of the black shale zone that lies at the bottom of this formation, is that right?

A Right, and use a Schlumberger correlation.

Q In order to correct your sample logs?

A That's right, to get away from the human error, we would

rather accept the Schlumberger tops.

Q In addition to human error in picking tops of formations, you also have an error caused by the lag of the samples coming from the bottom of the holes up to the surface, don't you?

A That's right.

Q There is a tendency there, is there not, for your samples to carry over from previous formations that you have cut, or higher formations you have cut through, is that not correct?

A That would depend largely on the condition of your hole, yes.

Q I noticed one or two sample logs -- it may not have been your work or it may not have been Amerada's work, -- on your B.T.A. well, it appeared, for example, there was a shale carry-over all the way down to the bottom of the hole, that was possibly a result of the carry-over from drilling through black shale formation, and then the samples remain in the mud until you get down through the formation.

A I don't believe you can drill a well without having some degree of carry-over, as you say.

Q Regardless of the formation you went through, you would have some carry-over?

A In an un-cased hole, that is right.

Q So that due to the error you mention and the carry-over and the lag in your sample that you will have, it is extremely difficult to be accurate in piaking the top of any formation, is that not correct, that that alone --

A (Interrupting) I should say by samples that would be a -- there would be a variance in the tops.

Q And by the same token, it would be difficult to pick any intermediate zones within a single formation such as the Devonian formation? In other words, the top of your pay -- it would

be difficult to pick the top of your pay within the Devonian formation by samples alone and well cuttings alone, is that correct?

A I would put a limit on that, in the difficulty to pick it as to feet, right.

Q What would you consider a reasonable error? Thirty feet, forty feet?

A No. I think on particular wells that are lagged -- samples are lagged, such as we handle our samples, I should say it should be within three to five feet.

Q Now, you picked the top of the pay section distinct from the top of the Devonian section down in the Devonian, is that right?

A That --

Q (Interrupting) In other words, there is a dense area, or an area of no porosity up on the top of the Devonian section, that doesn't produce oil, is that correct? In the well so far drilled, is that correct?

A Right.

Q Where do you pick the base of the pay section, at the water-oil contact, is that where you pick the base of the pay section?

A We would roughly say so.

Q Where have you determined the water table to be, subsea datum point?

A For the discovery well we used a minus 6775.

Q Have you cut the water in any other well drilled in the field other than the discovery well, your B.T.A.? Didn't you attain water in your Caudle well?

A Yes, we drilled into water.

Q Did you find a water table there, essentially the same depth?

A On the Caudle, we took a drill stem test 11,028. That is

roughly the same depth, yes, sir.

Q Then you assume from the information that you have available at the present time that the field is underlaid with a level water table, is that correct?

A Right.

Q Now, it has been testified here that -- and I believe you testified that you have determined in your opinion that the field is both porous and permeable, is that your statement?

A I said it was porous, right.

Q And you also testified that in your opinion it was also permeable?

A Apparently permeable.

Q And you determined -- you made that determination from well cuttings?

A And cores.

Q And what well have you cored, or on what well has core information been available to you?

A The only well we have core information on, is your well, the Texas-Pacific producer.

Q Do you have the advantage or the benefit of a core analysis in that well?

A I do not.

Q You merely base your opinion upon an examination of the core, is that correct?

A That is correct.

Q Did you examine it yourself?

A I did.

Q What methods are used by geologists to determine the perema-bility of a reservoir, Mr. Veeder?

A The geologist can only determine the apparent permeability.

Q Will you distinguish for the benefit of the Commission here and for the record, between porosity and permeability?

A Surely. Porosity is your openings in a formation. Your permeability would be considered as your connections between your openings.

Q In other words, porosity is the space that holds the oil, and permeability are the pipes that carry the oil to the well hole, does that state it in a rough way; is that more or less correct?

A Right.

Q And permeability is more or less a measure of the rate of flow, is that correct?

A Yes.

Q The flow of oil through the reservoir?

A That is right.

Q So for one well to drain 80 acres that has been requested and recommended here, you must assume a more or less uniformly high degree of permeability throughout the entire reservoir, is that correct?

A That is right.

Q And similarly, you must assume the same degree of uniformly high permeability throughout each 80 acres, or 80-acre unit in the reservoir?

A Right.

Q And if there are any dense zones or dense streaks within the reservoir, you do not have that uniformly high degree of permeability necessary for one well to drain 80 acres? When we are talking about draining 80 acres -- before you answer the question -- by that I mean, drain all recoverable oil under the 80-acre tract.

A Well, of course, if you have a dense zone, you don't have --

you will have no permeability in that particular zone, that's right.

Q So you would say then that if your reservoir contained dense areas and dense zones and dense streaks, you would not have the uniformly high degree of permeability necessary for one well to drain 80 acres, is that correct?

A You would not be able to recover oil that is not there, that is correct.

Q Wouldn't there be some oil that would be trapped behind the dense zones that wouldn't get to the well hole on the basis of one well to 80 acres?

A Not any more than wells in smaller locations, I would say -- smaller spacings.

Q In other words, your testimony is that one well will drain as much recoverable oil as two wells in an 80-acre tract?

MR. KELLOUGH: Now, just a moment, please. I do not want in any manner to thwart the cross examination, but counsel is asking questions about reservoir engineering about which this witness did not testify, and about which he is obviously not called on to answer. We have an engineer present. And if he was a reservoir engineer, why we could qualify him as such and he could make him his own witness, if he wants to; but he is not qualified in that respect.

COMM. SHEPARD: Do you have a witness here who could testify to that later?

MR. KELLOUGH: Yes, we have a witness, Mr. Christie; and we also have Mr. Millikan and we would be glad to put him on the stand.

COMM. SHEPARD: Then you can question them, Mr. Adair.

MR. ADAIR: All right, sir.

Q (By Mr. Adair) Now, I don't think the answer to this question requires any engineering information, Mr. Veeder. Assuming the same rate of flow from each well, two wells on an 80-acre tract will produce more oil in a given length of time than one well located on an 80-acre tract, will they not?

A If you have the same allowable?

Q Same rate of flow.

A Well, that is apparent.

Q That is correct, is it not?

A Yes.

Q As you say, that is apparent. So in order to take care of the royalty and lease operator and the State, who wants its taxes; the royaltor only wants to spend his money during his lifetime -- you have to increase the rate of flow from one well on 80 acres to the point that it will drain the 80-acre tract, in substantially the same length of time as two wells on the 80-acre tract?

MR. KELLOUGH: If the Commission please, I would like to request the Commission to ask Mr. Adair to limit his questions to questions of the witness. If he wishes to make a closing argument, I am sure he will have an opportunity to do so. I think it would simplify the proceeding if he be instructed to ask the question rather than to engage in argument.

COMM. SHEPARD: You may go ahead, Mr. Adair; but they have other witnesses, probably, who are better qualified to answer the question, so try to cut it down.

THE WITNESS: I would rather stay with the geology. That's my field.

MR. ADAIR: The point, if the Commission please,.-- Amerada has actually closed their main case as to the hearing

and they have presented the testimony of a geologist and an engineer, and some of these matters were not covered. We think that in asking for 80-acre spacing -- fixed-pattern spacing, that these various possibilities and probabilities should be considered not only from the standpoint of the argument but from the standpoint of the witnesses, who are the only ones available who can testify with reference to it.

MR. KELLOUGH: But we contend that whether the State collects taxes and how much, and whether the individual spends his money in his lifetime, is not the interest in this particular hearing.

MR. ADAIR: Let me re-word this question then, and eliminate those factors.

Q (By Mr. Adair) In order to drain 80 acres within a reasonable time with one well, as compared to two wells on 80 acres, you would obviously have to give the one well a higher allowable, wouldn't you?

A No, it is just a longer period of time to drain the acreage.

Q I said, within the same reasonable time.

A If you're working on the same time, yes.

Q And here again, if this is an engineering question and you don't prefer to answer it, we will let Mr. Christie answer it later. And, assume that you give such a well this higher allowable in order for it to support the higher rate of flow. You must assume again the uniformly high degree of permeability through the reservoir, is that not correct?

A State your question again.

Q Assuming that we have given this one well on one 80-acre tract a higher allowable in order that it will drain a recoverable amount of oil within substantially the same time as two

wells, you have to assume the same uniformly high degree of permeability throughout the 80 acres, the 80-acre tract, and throughout the reservoir, so that it will support this increased rate of flow, don't you?

A In general, I guess that's right.

Q Now, in your examination of the well logs and Schlumberger logs in the field, did you notice any abnormalities within it, such as dense zones and streaks?

A I have not.

Q Would you say if they are found in one well, it is reasonable to expect them to be found in all of them?

A I have found, in all wells examined, in what evidence we have had, we see no separation. It is a continuous porous zone.

Q A continuous porous zone?

A Right.

Q But that is not an answer to my question. If such a dense zone were found in one well, is it reasonable to assume that it might be present in other wells drilled?

A If we have found that dense zone. We have not found it.

Q And the only way, though -- due to the lag in samples, as you testified awhile ago, and the human element in picking samples, the only way you can be sure of a dense zone is by coring?

A That's right.

Q So as to determine the dense zone. By the samples, even though your depths might be three feet off, your dense zone would still be there in your section.

A Right.

Q And you can determine it by samples. Now, you have had available to you, samples of all wells drilled so far, and that

is the way you have of making your examination, based upon the samples from all Devonian wells in the field, is that correct?

A Yes, sir.

Q And by the same token, you have examined the Schlumberger surveys of all the wells in the field?

A Yes.

Q Let's talk a minute, Mr. Veeder, about the characteristics of Devonian structures and these Devonian fields you mentioned a minute ago, of Hightower, Knowles and Crossroads Pools. Are or are not these Devonian reservoirs characterized by steep dips on one side or another?

A I would say some of them are. We don't have enough evidence on all the fields mentioned.

Q Are they not also sometimes characterized by faulting?

A Faulting has been interpreted in one particular field, I would say.

Q In the Crossroads Field Pool?

A That's right.

Q Do you agree with that interpretation?

A It can be interpreted as such.

Q In such a case where you have very steep dips or faulting, it is possible to go from productive to non-productive from one end of an 80-acre tract to the other, isn't that right?

A That's right.

Q That was the case in Crossroads, was it not?

A In which particular instance are you talking about?

Q In the Santa Fe application?

A Which well?

Q Just a minute. I think the matter I am referring to is a

matter of public record, which the Commission has heard and is probably familiar with. The well to which I refer is this well here. (Indicating). It is upside down. Will you identify it?

A That's right. That is the Santa Fe well, and that is a low well. It would -- I would not say that that definitely had to be on the down-flow side of the fault.

COMM. SHEPARD: Which well is that?

MR. ADAIR: This well, if the Commission please, was considered in the Santa Fe's application for an exception. They drilled a dry hole on fixed pattern spacing on this side and asked for an exception, to drill over here where they thought the oil was present.

Q (By Mr. Adair) Let's look at the Hightower Field, Mr. Veeder. Would you say that the Devonian structure was characterized by very steep dips?

A On the wells we have evidence of, there are steep dips, by the three wells drilled at the present time.

Q On the wells drilled at the present time. Will you tell the Commission how much lower on structure, your Amerada No. 1 roach is than on your discovery well?

A That is another field. I could give that roughly.

Q I mean, you and Mr. Christie testified as to these fields being characteristic of Devonian reservoirs. Now, is it not true that your Amerada No. 1 roach drilled under a fixed pattern, 80-acre spacing plan, granted by the Commission, was dry in the Devonian 1 location south of the discovery well?

A That well was dry. I cannot say that the location was authorized by the Commission.

Q No, I didn't mean to say that location was authorized by the

Commission. I mean, it was on fixed pattern, 80-acre spacing plan.

A Right.

Q That is correct, isn't it?

A That is right.

Q Now, had that well been drilled on the 40-acre tract, part of the 80-acre unit closest to the discovery well, 330 feet from the unit line as authorized by the present State-wide rules, that well might have produced oil, might it not?

A And also, that well might have been a dry hole.

Q You had water in the Devonian, did you not?

A I beg your pardon?

Q You had water in the Devonian.

A Under roach?

Q Yes.

A We did. I mean, if we had moved it to the north, there is the possibility it could have been a dry hole.

Q And also, there is the possibility that it could have been an oil well?

A That's right. We did not know that when we staked the location.

Q That's the point I'm making. Fixed patterns of 80-acres result in dry holes, don't they?

A In all steps, wherever you make a location, I don't care what the spacing is, you take a chance on a dry hole.

Q The 80-acre spacing in the Crossroads Pool resulted in a dry hole, didn't it? Whereas, had it been drilled in the 40 closest to the production, 330 feet from the 40-acre line as permitted by State-wide rules, it would probably have gotten an oil well, wouldn't it?

A I couldn't say whether there would have been any oil. The well has not been drilled.

Q I'm asking your opinion.

A I would say you do not have the evidence of it.

Q You have no opinion?

A You're closer to production, but still it is a gamble.

Q The closer you are, would you state, to production, the less chance of getting a dry hole?

A Under normal conditions.

Q So, we have two cases in the two reservoirs which you have mentioned, the Devonian reservoirs, the Crossroads and the Hightower, where conforming to fixed-pattern, 80-acre spacing, resulted in dry holes, and you admit the possibility at least of their having gotten oil wells had they moved closer to production, 330 feet from the lease line as permitted by State rules?

A That is correct. Well, there is the same possibility when they started the well that is a dry hole now.

Q We are talking about the results as known now.

A I understand it is a dry hole, that's correct.

Q That is correct. All right, sir. Look at the Knowles area, which you testified about. There Amerada drilled its discovery well, its Hamilton, in the center of a 40-acre tract.

A That is correct.

Q While we are trying to find a Knowles map, Mr. Veeder, I have one more question about this Hightower area. There is another well presently being drilled, is there not, on the fixed pattern, 80-acre spacing, in the Hightower area, which is Gulf No. 1 well, located diagonally to the northwest of your discovery well?

A That's right.

Q Do you have any information? Has it as yet discovered oil on the Devonian?

A I have information -- no, I haven't information that it has oil or water in the well.

Q Is it not true, it is over 500 feet low to the discovery well on the Devonian?

A I believe that is untrue.

Q How much lower is it?

A Roughly, according to memory, I would say a little over 100 feet.

Q Over 100 feet low?

A That is my memory.

Q In total depth, how much deeper is it than your discovery well in Hightower?

A I do not have that information with me on Hightower.

Q Our information -- and we will put it on by witness -- this is our information, some 575 feet lower, and still no oil.

A There are Schlumbergers on those two wells.

Q That is our information. We will have a chance to examine our geologist on it. Now, getting over to the Knowles Tract. The hearing was held on that here not long ago, and the Commission, I think, is familiar with that.

MR. McCORMICK: No, the order has not been signed.

MR. ADAIR: I didn't mean to infer it had. I meant the hearing had been held on it.

MR. McCORMICK: Yes.

Q (By Mr. Adair) Your Amerada discovery well in the Knowles Pool was drilled in the center of a 40-acre tract, is that correct?

A I believe that's right.

Q You do not know of your own knowledge?

A I can probably get it from the gentlemen around here. I'm sure someone here has it.

Q Then your second well in the Knowles Pool was drilled on the 40-acre tract immediately north of the discovery well, is that not correct?

A Is that correct, Mr. Christie? Yes, that is correct.

Q And the third well drilled in the Knowles Pool, also by Amerada, was drilled in the 40-acre tract immediately south of the discovery well, is that not correct?

A That is correct.

Q So that so far as those three wells are concerned, you have essentially 40-acre spacing? You have them on three adjoining 40-acre tracts, that is correct is it not?

A I can say, well -- that is correct with the exception that the north well was -- the location was made originally for a Permean test.

Q But the point is, the three wells have been completed in the Devonian on adjoining 40-acre tracts; all three are producing oil wells, is that not correct?

A That's right.

Q So we have the situation here of two places where you have 80-acre fixed pattern spacing which resulted in dry holes; in the Hightower, three wells drilled, one dry for sure, and one running mighty low; while, in the Bagley, where you have drilled and developed on 40 acres, you have three wells drilled, and three oil wells.

MR. KELLOUGH: Are we just asking for understanding, or asking a question.

MR. ADAIR: That is correct.

A You have four wells at Bagley, I believe.

Q (By Mr. Adair) Of the three I asked you about all three --

A (Interrupting) Bagley, that is the area you are talking about?

Q I'm talking about Knowles.

A Yes, three at Knowles.

Q Yes. Was my statement correct?

A Essentially so.

Q In what respect was it wrong, Mr. Veeder?

A I misunderstood you about the number of wells in Bagley.

Q In Knowles you mean?

A In Bagley -- you said Bagley.

Q If I said Bagley, correct it to three wells in Knowles, I'm sorry. Now, Mr. Veeder, did you say definitely that the conditions which resulted in dry holes in Crossroads and Hightower did not exist within the limits of the Bagley Devonian reservoir?

A We don't have enough information at the present time to say either yes or no.

Q And by the same token, you do not have enough information then at the present time to say that 80-acre fixed-pattern spacing should be placed into effect?

A Yes, I think we do. You have to have a spacing.

Q Are you familiar with the Shafter Lake Devonian Field just across the line in Andrews County?

A Yes, to what extent?

Q Where it is located geographically?

A I am.

Q Do you know whether or not it developed on 40 or 80-acre spacing pattern?

A Yes, I think it has been developed on 40.

Q Are you familiar with the Fullerton Devonian Field, located across the State line in Andrews County, its geographical location?

A Is that the Fullerton Pool or Field?

Q The Fullerton Pool.

A Right.

Q And do you know whether it developed on 40 or 80-acre spacing?

A The pattern would be considered as 40.

Q Now, one last question, Mr. Veeder, on this particular subject. In what way do the rules that you propose here, fixed pattern, 80-acre spacing, in what way would they prevent waste?

A In this way: we figure we have good porosity and good permeability. If we drill one well in an 80-acre tract, it would cover the same amount of oil -- I'm not going to make that a time limit -- as if we drilled two wells in that same 80 acres. That certainly would be a saving.

Q To whom?

A Well, I think it would be a saving to everybody in the end. That is just waste, waste of materials and whatever you want.

Q Who pays for the second well?

A Well, the operator, if you are talking about the operator's lease.

Q In this area, you also have a Pennsylvanian formation that is productive, do you not, in the Bagley area?

A That's right.

Q Is it co-extensive with the Devonian, that is, does the Pennsylvanian produce everywhere where the Devonian does, and vice versa?

A To date, all wells have had either gas or distillate showings

on drill stem tests.

Q In the Pennsylvanian?

A In the Pennsylvanian.

Q And to date one well has been dry in the Devonian?

A That's right.

Q Indicating at least that they are not productive, each zone is not productive throughout?

A Each well would not produce out of both zones, is that what you mean?

Q And by the same token, each 40-acre tract might not produce in each zone, is that not a probability?

A That is possible.

Q So that in forming an 80-acre unit out of two separately owned 40-acre units, you would have the difficulty of adjusting correlative tracts, based upon one 40 acres possibly being productive in both zones, and the second 40 being productive in the Pennsylvanian only?

MR. KELLOUGH: May I interrupt a minute? This application which we filed asked for spacing in the Devonian. Now, if he intends to ask that the Pennsylvanian formation be included, that, I understand, is a separate reservoir. I don't believe it is proper proceeding. He is asking this witness now if he is going to encounter difficulties in trying to pool the Devonian oil with the Pennsylvanian oil. I don't know that it has anything to do with this. It is already determined as two different pools.

COMM. SHEPARD: We will confine ourselves to the application, Mr. Adair.

MR. ADAIR: If the Commission please, I believe I am doing that. Their application here and certainly their exhibit

would indicate that the Amerada had declared themselves partners in with us in the well presently drilling in No. State B.C. 1 or C. 1, it is, and would indicate in order to form that unit, some pooling or unitization or something would be necessary. Also, it would indicate that down in the S½SE¼ of 2, that additional pooling was necessary. Their state ownership map here -- I mean, ownership map here, indicates separately owned 40-acre tracts, either by fee ownership or by lease ownership; and that in order to form their 80-acre units, it would be necessary to pool.

MR. McCORMICK: Possibly to pool as to the Devonian, not as to the Pennsylvanian, isn't it, Mr. Adair?

MR. ADAIR: I don't know, sir. I have been advised by New Mexico counsel that there is considerable doubt as to whether the state can prove by zone, and I'm not attempting to answer that question.

MR. McCORMICK: Well, if you farm out a lower zone, you could also pool a lower zone, couldn't you?

MR. ADAIR: I don't know. Now on unitization, you had better ask a New Mexico lawyer about that. I prefer not to try to answer. It sounds logical that you could do so. But under unitization, talking about state unitization, I understand that the lease itself has to be unitized. There is no provision in the statute for unitization of zones.

MR. McCORMICK: Isn't that usually accomplished by the operating agreement?

MR. ADAIR: Yes, sir, generally entered into prior to the time the well is started. I merely wish to indicate that in any pooling or unitization, the question is going to be complicated due to the fact that you have two productive zones in the area

rather than one.

Q (By Mr. Adair) Mr. Veeder, would you kindly point out on the map that has been placed in evidence here, the various 40-acre tracts on which Amerada has a lease, on which there are either over-riding royalties outstanding, or oil or production payments outstanding, particularly with reference to the state leases?

A I do not have that information.

Q Would it be possible for you to get the information during the noon hour from someone representing Amerada?

MR. KELLOUGH: If the Commission please, in the interest of saving time, I will stipulate into the record what our files show with reference to the location of over-riding royalty interests.

Our files reflect there is an over-ride, and I am unable to state the amount or to whom --

COMM. SHEPARD: Doesn't matter.

MR. KELLOUGH: But our files reflect an over-ride which covers the W½NE¼ of Section 3. There is another over-ride which covers the NE¼NE¼ of Section 3. In other words, the NE¼NE¼, that is a 40-acre tract.

MR. MCCORMICK: Straight over-ride?

MR. KELLOUGH: Straight over-ride. Then the third over-ride covers the SE¼NE¼ of Section 3. The third over-ride covers the W½, and two more, covering the other two 40s. Now, coming down to the SE¼ of Section 3, there is an over-ride which covers the E½SE¼, and there is another one covering the NW¼SE¼, so there is a 40, and another 80 down there. Now, move over to the NW¼ of Section 2. There is one over-ride which covers the W½NW¼, Section 2. That same over-ride also covers the NE¼SW¼,

and the SW¼SE¼ of Section 2. In other words, it covers the 80 acres in the W½NW¼, and the two diagonal 40s.

Then there is a further over-ride which covers this tract. It is two 40s. It covers the SW¼NE¼ and the NW¼SE¼ of Section 2. That is an 80-acre tract. That is the unit in which the discovery well is located, and which I understand is a farm-out from T.P., and I believe the over-ride is to them. I can't say for a certainty, but my information is that is all the over-rides in that area.

MR. McCORMICK: What about payments?

MR. KELLOUGH: I'm speaking of oil payments and over-rides as one group. As a matter of fact, I think they are all oil payments. Perhaps a certain percentage is not oil, and a certain percentage is uncovered.

MR. McCORMICK: Well, the T.P. is.

MR. KELLOUGH: Well, that may be.

MR. ADAIR: Is that an over-ride there? (Indicating).

MR. KELLOUGH: I can't say.

MR. McCORMICK: May we have it identified for our people?

MR. KELLOUGH: He is referring to the NE¼NE¼ of Section 2, a 40-acre tract, and I cannot say for a fact. Mr. Adair is informed, and I'm going to accept that for your purpose in this hearing.

COMM. SHEPARD: We will stand in recess until 1:30.

MR. KELLOUGH: For the purpose of the record, I wish to offer in evidence all exhibits marked.

COMM. SHEPARD: They will be received in evidence.

(Applicant's Exhibits Nos. 3 & 4, received in evidence).

(Whereupon, at 11:50 o'clock, A.M., the hearing was recessed).

AFTERNOON SESSION

(The hearing re-convened at 1:30 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order, and you may proceed, Mr. Adair.

MR. ADAIR: Mr. Shepard, if the Commission please, we have no further questions of Mr. Veeder at this time. Thank you very much, Mr. Veeder.

MR. KELLOUGH: Before Mr. Adair continues his cross examination of Mr. Christie, I would like to ask Mr. Veeder a couple of questions on redirect.

COMM. SHEPARD: Go ahead.

REDIRECT EXAMINATION OF MR. VEEDER

Q (By Mr. Kellough) Mr. Veeder, I would like to clear up one point that might have been misinterpreted. You testified I believe, that this reservoir had continuous permeability, did you not?

A Yes, continuous porosity.

Q Continuous porosity.

MR. ADAIR: I didn't hear that. I'm sorry.

MR. KELLOUGH: I asked if he didn't testify that this reservoir had continuous porosity.

MR. ADAIR: And permeability, didn't you ask that, too?

A And I referred to it as apparently permeable, I believe.

Q (By Mr. Kellough) Now, did you intend to convey the impression to the Commission that it had uniform porosity?

A I did not. I meant the word as continuous, as I said.

Q It is not your testimony, then, that each and every part of the reservoir is equally porous?

A That's right.

Q But that there are some sections of the reservoir which are

more porous than others?

A Right.

Q There is a variance, in other words?

A There is a variance in the porosity.

Q Now, is that a typical characteristic of Devonian pools?

A Very much so, I would say.

Q One other point. On cross examination, you were asked with reference to the Hightower Pool.

A That is right.

Q I believe Mr. Adair assumed a set of facts where had you drilled a well on the 40-acre tract immediately south of the B.T.B. producing well, that you would have obtained a producing well?

A He gave that assumption.

Q He assumed that set of facts. From your information that you have of that reservoir, is that a correct assumption of fact?

A I beg your pardon?

Q Is that a correct assumption?

A I do not think it is.

Q Now, assuming that it is -- assuming the assumption, the set of facts assumed by Mr. Adair, that instead of dropping down to the 40-acre tract once removed from the B.T.B. well, that you had drilled another well immediately south of the B.T.B. well on the 40-acre tract immediately south -- assuming that you had done that; and further assuming as Mr. Adair did that you discovered an oil well, would you then have been required to drill an additional well at the location where the roach well was drilled?

MR. ADAIR: Just a minute, Mr. Veeder. I believe that

calls for a conclusion of law, as to what you believe, what you mean by required. I have no objection to you leading the witness any at all.

Q (By Mr. Kellough) Would you have recommended to your company that a well be drilled?

A That is right.

MR. ADAIR: What is right?

THE WITNESS: That I would recommend -- if you had a 40-acre off-set discovery well, B.T.B., and assume it made a good well, I normally would recommend a south off-set to it, which would be the well in question.

Q (By Mr. Kellough) The roach well?

A Yes.

Q The fact is, that was a dry hole?

A That's right.

Q Now, the result would be what?

A We would have two oil wells, and one dry hole.

Q And under the testimony given here, you would have two wells where one would recover the oil under that area?

A That's right.

MR. KELLOUGH: That's all the redirect I have.

MR. ADAIR: That brings forth one more question.

RECROSS EXAMINATION

Q (By Mr. Adair) If the royalty or over-ride royalty ownership happened to be different between the two wells that you drilled that resulted in dry holes, I mean, between those two tracts, the two adjoining 40-acre tracts, then the royalty owner under the South 40 would have never had a well drilled on his land, would he?

A I wouldn't know why not.

Q Put it this way: in view of the fact you have drilled a dry hole now on the fixed pattern location, you would not at this time recommend moving up on the 40 just to the north of the well?

A It wouldn't be logical.

Q And you base that opinion, in part at least, upon the dry hole, is that right?

A That is right.

MR. McCORMICK: Mr. Veeder, have you attempted to estimate the amount of oil in place in this Bagley area?

THE WITNESS: I have not.

MR. McCORMICK: Well, have you attempted to estimate the oil under place, under each 80?

THE WITNESS: The amount of oil in the field?

MR. McCORMICK: Under each 80?

THE WITNESS: No, I have not. My method has been by comparison, not as to the specific amount of oil, that is, to the barrel, that's what you inferred?

MR. McCORMICK: Yes.

COMM. SHEPARD: Any further questions?

MR. KELLOUGH: I have no further questions of this witness.

MR. ADAIR: No.

COMM. SHEPARD: Does the T.P. wish to offer any witnesses?

MR. ADAIR: If the Commissioner please, not until Mr. Christie is cross examined.

COMM. SHEPARD: Proceed.

MR. MORRELL; Foster Morrell, U.S. Geological Survey. I have one question from Mr. Veeder.

COMM. SHEPARD: All right.

MR. MORRELL: Mr. Christie, on the exceptions as to the spacings of the units that are cited on the map which you have, could you enumerate or specify those exceptions, specify the exceptions?

MR. CHRISTIE: You are asking Mr. Veeder that question?

MR. MORRELL: Mr. Christie testified on that.

MR. CHRISTIE: Those 80-acre tracts as outlined by the dotted line would be the exceptions.

MR. MORRELL: Well, I don't have the dotted lines.

MR. CHRISTIE: Well, they are in evidence with the Commission. (Document handed to Mr. Morrell).

MR. MORRELL: That answers my question.

MR. McCORMICK: Do you want to proceed with the examination?

MR. ADAIR: Yes, I would like to do so now.

CROSS EXAMINATION OF MR. CHRISTIE

Q (By Mr. Adair) Mr. Christie, I believe you testified that P.I. tests that you took indicated to you good permeability throughout the reservoir, is that correct?

A Yes, sir.

Q Now, in what well or wells were these P.I. tests taken?

A We have taken productivity tests on our B.T.A. No. -- State B.T.A. No. 1, State B.T.C. No. 1, and State B.T.D. No. 1.

Q For the purposes of illustration, will you get before you the data on the B.T.A. No. 1?

A Yes.

Q First, to save time, will you tell us how much of the pay section is open in that well?

A The pay section in the B.T.A. No. 1 is open between 10,950 and 10,965, or 15 feet.

Q And how much pay section did you have in that B.T.A. well in the Devonian?

A Maybe Mr. Veeder can give you that better than I can.

MR. VEEDER: The top of the pay would be regarded as 10,790, -- 190 feet.

MR. ADAIR: One hundred ninety?

MR. VEEDER: Yes, sir.

Q (By Mr. Adair) So actually, you are basing your conclusion on -- from 15 feet that is perforated out of 190 feet of what you consider the pay section?

A Yes, sir.

Q Now, actually a P.I. text would indicate permeability somewhere up or down the well bore in the pay section. It doesn't necessarily indicate uniform permeability or continuous permeability up and down the well bore, does it?

A It doesn't necessarily indicate that but we are --

Q (Interrupting) You are making that assumption?

A We are reasonably sure we have continuous permeability, if it is a water-drive field which we have testified to.

Q Actually, the drive which you get from your P.I. Test in the B.T.A. could be coming from the bottom, we will say, of the pay section, could it not, so far as you know?

A Well, it would be limited to the 15 feet, I believe.

Q That you have exposed to your well bore?

A Yes, sir, and if there is continuous permeability, it is possible that the area above and below that 15 feet, might be contributing to the production through the perforations.

Q Yes, sir. I notice you said, "if". It is possible, then, that there could be dense zones within the pay section, both above and below your perforations, that is possible, and wouldn't

be indicated one way or the other from your P.I. tests?

A No, I don't believe it would.

Q I believe Mr. Veeder said there was a dense zone at the top of the Devonian of various degrees of thickness, before you actually got into the pay section?

A That's right.

Q So, assuming a similar dense zone down in the pay section -- to put it this way: the P.I. test does not rule out those dense zones at all?

A No, sir.

Q All right. Now, Mr. Christie, what types of reservoir drives do you have? What primary types of reservoir drives do you have?

A Well, there --

Q (Interrupting) I notice you speak of water drive as one.

A Well, ordinarily speaking, there are three types of different reservoir drives -- water drive, gas drive, or gas cap.

Q Now, do we have a gas cap here ?

A No, we do not.

Q So that type of drive is not furnishing any energy in this particular reservoir, is it?

A Not to our knowledge, no, sir.

Q Now, how about your gas drive? Do we have an effective gas drive within this reservoir?

A No, I believe it is not contributing very much to the productivity.

Q In other words, if you had a gas drive alone, why, one well would not drain 80 acres, would it?

A Yes, it could easily.

Q I'm not talking geologically at this time now. I am talking about during your lifetime, or within twenty, thirty, forty years.

A Yes, if you had sufficient permeability, I think it would.

Q Now, I'm not talking about a gas drive as such. I am talking about the gas drive you have present in this reservoir. What was the highest gas-oil ratio you got on the Devonian?

A The highest was 33 cubic feet per barrel on Amerada State B.T.C. No. 1.

Q You could certainly say that the gas drive could not be very effective at all; would you not say that, from such a low ratio?

A Yes, I think that is reasonable to assume.

Q And they do not happen to have a bottom-hole flood analysis?

A No, we have not run a flood analysis -- a botbom-hole flood analysis.

Q So we have ruled, out of the three drives you have mentioned -- we have ruled out the expanding gas cap and the gas drive, as effective factors in drainage of this reservoir?

A Yes, thatis, initially, at least.

Q At the present time?

A I think that is correct.

Q So you hope that you have an effective water drive?

A Yes.

Q Or at least, a partially effective wa er drive?

A We hope we have an effective water drive.

Q I believe Mr. Veeder testified that you were of the opinion there was a level water table under the reservoir?

A That seems to be the indication at the presenttime, yes, sir.

Q Now, Mr. Christie, let's speak for a moment, if you will, in simple terms, so I can understand it, about the characteristics of a water-drive reservoir. You have, do you not, what would be, let's say, in the form of an inverted saucer or bowl, or something that serves as a trap for the oil coming up under-

neath it -- that type of structure?

A That's about as simply stated as you could state it, yes, sir.

Q To keep it simple, as I say, so I can understand it. And underneath that, you have a level water table?

A Presumably, yes, sir.

Q Now, the thrust or drive comes from the -- the water drive comes from the water pushing up the oil, is that what happens?

A It could be, or it could be horizontally from some entrance from the side, depending on whether your acquafer -- depending on the content.

Q Well, it could be deflected by dense zones, could it not?

A I don't understand the question.

Q All right. I'll start over again. The water coming up underneath the oil, is shoving it up into this structure that has trapped the oil above it.

A Yes.

Q As your oil is removed, the water table will presumably rise, and your water table will rise right up as the oil is removed, is that what you said?

A That's right.

Q So that the wells that are located on the flank of the structure will be washed out first, will they not?

A Yes, sir.

Q And the last well to produce oil on that structure would be the well that might be situated right at the apex or top of the structure?

A That is assuming that you have the same allowable and produce the same amount out of the wells.

Q So the fellow who has a lease down on the flat of a structure had better get his oil as it goes by; otherwise, he will never get it, is that correct?

A Yes.

Q In other words, your drainage is up-structure. Is that what you would say?

A Yes, sir. He is in a very unfavorable position if he is on the edge of a structure.

Q Now, what do you mean by saying he is in an unfavorable position, other than just the location?

A Well, just as you stated -- he will be -- his tract will be washed out before the well in the higher up structure will be washed out.

Q Now, with a water drive, such as you assume to be present here, what effect does unequal permeability have on that drive?

A I beg your pardon?

Q Now, originally here, we had testified, or we had assumed a uniform permeability throughout the reservoir.

MR. VEEDER: I beg your pardon.

Q (By Mr. Adair) Now that has been corrected, and you assume continuous permeability throughout the reservoir, is that correct?

A Yes.

Q And there may be zones of low permeability, or zones of high permeability.

A Yes, sir.

Q In a water drive reservoir, what effect, if any, do those various zones of unequal permeability have?

A Well, it would depend on your rate of production from individual wells. Ordinarily, we would expect the oil to travel

through the more permeable sections easier.

Q And first?

A Easier and first.

Q Followed by water?

A Yes, sir.

Q So you would have what is known as fingering or tonguing of of water going into the reservoir?

A Well, you might have if you produced at such a rate where you have a differential in pressure. If you maintain the pressure uniformly, I think it would flush out the less permeable streaks as well as the more permeable streaks.

Q And if you have those uneven areas of permeability or unequal areas of permeability down flank with the flank of the structure, that further aggravates the down-flank lease operator's position, doesn't it?

A If you assume those conditions, I think it would, probably, yes.

Q Well, you are not willing to say that there is uniform permeability, and you think that probably there are varying degrees of permeability throughout the reservoir, is that not correct?

A Yes, that is characteristic of limestone and dolomites.

Q Now, with a water drive, Mr. Christie, let's assume for the moment that we have dense zones running through the reservoir, such as we find at the top of the reservoir. Now, what would be the effect there in a water-drive reservoir?

A Well, I don't know just what kind of an answer you want there.

Q Well, let's tie it down to our immediate problem here. Let's assume 80-acre spacing, with one well to 80 acres. And let's

assume that between the 40 that the well is located on and the 40 that goes with that well tract in order to make up your 80-acre unit, let's assume that there happens to be a dense zone or area. Now, how will the oil from the off-side of this dense zone or area, be produced through the well in a water-drive reservoir?

A Well, it may not be produced in that one particular well. It will be produced in some other well of the field.

Q And probably some other lease or fee owner, too?

A Yes, just like you would get under any spacing.

Q Well, in the situation we have assumed, the dense zone lying somewhere in the middle part of the 80-acre tract, 40-acre spacing would get at least part of the oil, wouldn't it, that moved off and was drained through some other oil well?

A Not necessarily. If the well happened to drain half that area, it might get but very little.

Q It would get some, but it wouldn't get all, if you just relied upon one well to 80 acres?

A It would probably get its -- depending on the reservoir conditions, it would probably get its share of the reservoir oil.

Q Now, Mr. Christie, you do not contend, do you, that when you say one well will drain 80 acres, you don't contend that the drainage area will follow your lease lines, or your 80-acre tract lines, do you?

A No, sir.

Q What is the shape of the drainage area?

A Well, generally, it is a radial.

Q Circular in shape?

A Circular, yes, sir.

Q So it would be a circle that would contain at least 80 sur-

face acres under the --

A (Interrupting) Generally speaking.

Q On the assumption and the rules you are asking for here, is that right?

A Correct.

Q At least 80 acres?

A Yes.

Q Now, of course, locating your well in the center of a 40 and drawing a circle around it, that would contain 80 acres, why, you are going to take in some of your neighbor's land around, aren't you?

A Yes, sir.

Q You are going to drain some of your neighbor's oil?

A Just like any other well will drain some of your neighbor's oil, yes, sir. That is the primary reason for a -- for uniform spacing, is to allow everyone to get his share of the oil.

Q In other words, we will assume then, a series of over-lapping circles, of circulating over-lapping circles of drainage throughout the field?

A Yes.

Q If you get some of your neighbor's oil, and your neighbor gets some of yours, it all balances out, is that your assumption?

A Yes, sir.

MR. ADAIR: If the Commission please, we have here an ownership map of this particular area. It may or may not cover more land than the map we had here this morning. I've lost mine during the noon hour. But it has the wells located thereon and we tender it here to Mr. Christy, since it has not

been marked --

COMM. SHEPARD: (Interrupting) All right.

Q (By Mr. Adair) Mr. Christy, what is the last well Amerada completed in that reservoir?

A State B.T.D. No. 1.

Q Will you take a pencil, please, and draw around that well the area you think will be drained by this particular well?

A Roughly will be satisfactory?

Q Yes, sir, unless you --

A That's too large, isn't it?

Q Make any changes you wish.

A No, that is it, roughly.

Q That is roughly the area you think will be drained?

A We will assume, roughly, an 80-acre circle.

Q Well, this morning you said at least 80 acres and it might be -- might drain more?

A Yes.

Q Are you going to confine yourself at this time now to 80 acres?

A If all the wells in the field are spaced on 80 acres, it will be confined more or less to 80 acres.

Q Now, this morning -- do you mind if we put this up on the board? (Done). This morning, Mr. Veeder testified that the highest well in the field, I believe, was this well located here. (Indicating). Can you see, Mr. Veeder?

MR. VEEDER: Yes.

Q (By Mr. Adair) And that the next highest well in the field was, I believe, the T.P. well located here, Texas-Pacific well B. 1. That the next highest well in the field was Amerada's B.T.A. well, and that the lowest well in the field was Amerada's

B.T.D. well. So we see, do we not, that coming down this line here from Texas-Pacific B.1 well, to Amerada's B.T.D. well, we are going down-structure, is that correct?

A Yes, sir.

Q And I believe you testified that the drainage of oil was up-structure in a water-drive reservoir such as you assume this to be.

A I didn't say drainage. The migration is up-structure.

Q Would you say that of the final drainage area of this down-structure unit, that more of the oil will come from down-structure than will come from up-structure?

A Depends in which direction your water-drive is coming from.

Q We here have assumed, have we not, a level water table?

A That is correct. Also assume that we have an aquafer out from the field somewhere supplying the water and that will be the direction of your water drive.

Q You have no information on that?

A No, we do not have, at least, I do not know which direction the water drive is from.

Q It could be coming from this direction (indicating) as well as from any other point on the compass, couldn't it?

A Well, as far as my knowledge is concerned, it could, yes, sir.

Q This direction -- I'm moving in towards the northeast. So in such a case, if your water drive is coming from this direction, and you cannot say it is not, -- most of the oil produced by the B.T.D. well is going to come from down-structure, isn't that sound engineering?

A Assuming that the water drive is from that direction, yes, sir.

Q So in that case, if you were called upon to define the drainage area of this B.T.D. well, you would move your circle south, that is, in a southwest direction, or drop it south. You drop it down-structure?

A Well, I am not concerned with what area this particular well would drain; I am concerned more with how much oil that well will get from the reservoir as a whole.

Q Unfortunately, Mr. Christy, you have to adjust the relative rights as I understand it, under the New Mexico law, based upon giving the land owner a fair share, to produce the recoverable oil under his land, is that correct?

A Well, that is a legal question apparently.

MR. KELLOUGH: Just a minute, please. He is arguing the law with the witness now, and he has got to know just exactly what it is. I don't think it is fair to this witness to argue the law with him, New Mexico law, on the point. That may be a matter which we can discuss at the time.

COMM. SHEPARD: You shouldn't ask any more legal questions of the witness, Mr. Adair. Confine yourself to engineering questions.

Q (By Mr. Adair) So actually, assuming the facts as we have heretofore stated them, your area of drainage drawn around this B.T.D. well, would show more oil coming from down-structure up to the well than would come from up-structure down to the well?

A Theoretically, yes, sir, if your water drive is from that direction.

Q In such case, then, Mr. Christie, the owner of these two leases would be afforded a better opportunity of recovering the oil under his tract if he drilled his wells up within 330 feet of the lease lines?

A Well, he would so far as the north edge of those leases are concerned; but on the other hand, if he drilled within 330 feet and crowded the field, he wouldn't be entitled to as much oil.

Q Well, now, isn't that last statement a conclusion? We'll let it end for whatever it is.

MR. ADAIR: I have no objection. That's all we have of this witness.

REDIRECT EXAMINATION

Q (By Mr. Kellough) Mr. Christie, adopting the assumed set of facts which Mr. Adair assumed, which is that there is a water drive going north by east, wouldn't the same drainage characteristics apply to the Texas-Pacific Coal Company well farther up the assumed dip?

A If they drilled a well, yes, sir.

Q Is it not true in any water-drive reservoir that there are locations which will be more productive than others in the field?

A Yes, sir.

Q Can you say as an engineer that in any oil field or, particularly in any water-drive field, that each and every lease will recover the same amount of oil as each and every other lease?

A We have no way of controlling the oil underneath the boundary line, though we have ways of controlling oil by the mechanics of the reservoir. It makes no difference whether the spacing is 10 acres, 20 acres, 40 or 80. We will continue to get the share of the oil in the reservoir and not underneath any particular lease, depending on the mechanics of the reservoir.

Q Would it seem to you, then, as an engineer, reasonable to

assume that a spacing program should not attempt to equalize recovery by surface acreage, but should, as much as possible, assure that each owner recovers the proportion of the amount of oil to which, structurally, he would be entitled to recover?

A That is correct. It would be a very involved matter to devise a formula in any type of reservoir whereby each lease owner would get exactly his share of the oil underneath his particular tract.

Q If any inequities in any material degree should be developed by future evidence, wouldn't it be your recommendation that the Commission be authorized to grant an exception and reduce the allowable, probably separately; and would that in your opinion be sufficient to assure the owners of recovering the oil to which they are justly entitled?

A Well, if they had some way of determining how much they are justly entitled to under reservoir mechanics, I think it would, yes, sir. They would have that right.

RECROSS EXAMINATION

Q (By Mr. Adair) In any event, Mr. Christie, the owner of a separate tract would be more likely to get the oil, to recover the oil under his tract with two wells than he would with one, wouldn't he?

A Well, he would get the same amount of oil, but it might be coming off of somebody else's tract; but eventually, he would get the same amount of oil from the pool.

Q Assuming continuous permeability?

A Yes, sir.

Q That is a factor in your answer, isn't it?

A Yes, sir.

MR. ANDERSON: May I ask Mr. Christie a question?

COMM. SHEPARD: Yes. Give your name.

MR. ANDERSON: Bob Anderson of Roswell, representing Malco Refineries of Roswell, New Mexico.

Mr. Christie, have you any estimate of recovery in the Devonian?

THE WITNESS: No, I haven't made those observations.

MR. ANDERSON: Well, do you think, in effect, the basic pattern can be determined before you have any idea of recovery per acre?

THE WITNESS: I don't see that recovery has any bearing on it.

MR. ANDERSON: Well, I should think it would.

THE WITNESS: Except from an economic standpoint.

MR. ANDERSON: Well, that, I should think, would be one of the Commission's principal concerns. In other words, the principal reason, I should think, for increasing the acreage pattern would be to make it economically feasible. In other words, if the wells are not commercially productive on 40-acre spacing, it would be necessary to increase the pattern so that it can become commercially productive. There might be a saving of the oil and of course, the Commission and everybody is interested in conservation. But there is a question, too, will the wells be profitable? I think the testimony is 190 feet of pay and with the water drive, that recovery from acreage is very, very, -- substantially much higher in most fields in New Mexico. The 40 acres would not, for instance, be necessarily profitable, or more profitable than if you had less cost of development per acre.

MR. KELLOUGH: If the Commission please, I'm sorry I'm not acquainted with the gentleman. He is testifying, and if

he has an interest in this area, if his company does --

COMM. SHEPARD (Interrupting) He's just asking a question.

MR. KELLOUGH: That is for information --

COMM. SHEPARD (Interrupting) Well, of course. Mr. Adair, do you have any more questions?

Q (By Mr. Adair) The answer is, you get the same amount of oil --

A If you get the same amount of oil, or substantially the same amount of oil, why spend from $225,000.00 to get it, which the public eventually is going to have to pay for.

COMM. SHEPARD: Any further questions?

MR.KELLOUGH: No.

MR. McCORMICK: Do you rest?

MR. KELLOUGH: Yes. If the Commission please, we rest, with the privilege of calling a rebuttal witness, if we may have it.

COMM. SHEPARD: All right. We will take about a five or ten minute recess.

(Whereupon, at 2:25 o'clock, P.M., a recess was taken, the hearing being re-convened at 2:35 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order.

At this time, I want to introduce Governor Mabry. (Applause).

GOV. MABRY: Thank you a lot.

MR. ADAIR: If the Commissioner please, our witnesses have not yet been sworn.

COMM. SHEPARD: Will you swear them, Mr. Graham? (Done). You may proceed, Mr. Adair.

MR. ADAIR: Thank you, sir.

G. R. CARTER

being first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Will you state your name to the Commission, please?

A G. R. Carter.

Q Where do you live, Mr. Carter?

A Midland, Texas.

Q By whom are you employed?

A Texas-Pacific Coal and Oil Company.

Q What capacity?

A Division Geologist.

COMM. SHEPARD: Speak louder, please.

Q (By Mr. Adair) Will you state briefly your training and experience as a geologist?

A I am a graduate from the University of Oklahoma, have a Bachelor's Science Degree in geology. I have worked as a geologist for 13 years, eleven and a half of those being for the Gulf Oil Corporation, and since 1947, for the T.P. Coal and Oil Company.

Q In your position as a geologist for Texas-Pacific Coal and Oil Company, are you familiar with the area known as the Bagley Area in Lea County, New Mexico?

A I am.

Q Does Texas-Pacific Coal and Oil Company own leases in that area?

A They do.

Q How many different or separate leases do they own in the Bagley area?

A They own three.

MR. ADAIR: At this time, Mr. Commissioner, I offer in evidence photostatic copies of three leases, mentioned by Mr. Carter, and the purpose for putting them in evidence will be apparent when I ask Mr. Carter this next question.

Q (By Mr. Adair) Mr. Carter, do you have a 40-acre tract in the Bagley Area that is covered by a single lease?

A Yes, we do.

Q And that lease in turn covers additional acreage not located within the Bagley Area?

A That's right.

MR. ADAIR: If the Commission please, I offer these in evidence.

MR. KELLOUGH: No objection.

COMM. SHEPARD: They will be admitted.

(Tex.-Pac. Exhibit No. "B" was received in evidence).

MR. McCORMICK: Which 40-acre tract is that?

MR. ADAIR: The SE¼SE¼ of Section 1, 12 South, 33 East.

Q (By Mr. Adair) Mr. Carter, I now ask that you turn around and face the board. I now refer you to the plat on the lands, the plat on the board, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "C", and ask you to explain, please, what that plat is.

A That is a lease ownership plat. The red indicates the leases held by the Amerada; the yellow, leases by the T.P. Coal and Oil Company; and the brown, leases on other companies.

Q I refer you next to the plat immediately to the right, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "D", and ask you what that plat represents?

A That is a mineral fee ownership plat, the blue indicating the

state owned leases, the yellow or orange, the federal leases, and the green, individual leases.

Q All right. I refer you next to the plat that is located immediately to the right of the mineral ownership plat, and ask you what that plat represents? It is marked Texas-Pacific Coal and Oil Company's Exhibit "E".

A That is an interpretation on the geology on top of the Glorieta Sand in the Bagley Area.

Q Now, when you say that is an interpretation, you do not mean that you will -- that that is the way it actually exists under the ground, but in your opinion, that is a reasonable interpretation, is that right?

A That's right.

Q Based upon the wells that have now been drilled?

A That's right.

Q I refer you now to the plat located immediately below, and marked, Texas-Pacific Exhibit "F", and ask you what that represents?

A That is a contour map of the Bagley Area as interpreted on the top of the Pennsylvanian Formation.

Q There again, you do not mean that that is exactly as the conditions in the Pennsylvanian formation will be found underground, but that is a reasonable interpretation, in your opinion, based upon the wells that have now been drilled in the area?

A That's right.

Q I refer you to the plat remaining on the board, marked Texas-Pacific's Exhibit "G", and ask you what that plat represents?

A That is an interpretation of the geology in the Bagley Area as contoured on the top of the Devonian, I mean, to the base of

the black shale.

Q Which Amerada calls the top of the Devonian in testimony here in this hearing?

A Right.

Q Now, there again, Mr. Carter, I ask you whether or not you say that is exactly the way the contour of the Devonian formation will be after the field is drilled up?

A That is not. It is merely an interpretation from the data we now have.

Q In your opinion, it is a reasonable interpretation?

A Right.

Q Is there any portion of that contour there about which you can feel reasonably certain?

A I can feel reasonably certain in the immediate area between these wells, extending from T.P. State B, down through and including the Amerada No. 1 Caudle well.

Q Now, also referring you to the same map, Exhibit "G", what does that blue line which follows closely the red line around the contouring, indicate?

A That is our estimate of the water level.

Q Found in the Devonian?

A Yes.

Q That assums a level water table?

A Yes, sir, that's right.

Q And that also would mark -- according to that contouring interpretation -- that would mark the limits of production where you have it contoured?

A That's right.

Q In the Devonian?

A That's right.

MR. ADAIR: If the Commission please, we offer all these

plats in evidence.

COMM. SHEPARD: They will be accepted.

(Tex.-Pac. Exhibits Nos. "A", "B", "C", "D", "E", "F", and "G", received in evidence).

MR. McCORMICK: I would like to ask who made these interpretations, you?

THE WITNESS: The geologist in the Ft. Worth office and myself.

MR. McCORMICK: Under your supervision?

THE WITNESS: Yes.

MR. ADAIR: Any other questions, Mr. McCormick?

MR. McCORMICK: No.

MR. MORRELL: May I ask a question of this witness?

MR. ADAIR: Yes.

MR. McCORMICK: Wait until he is through, Mr. Morrell.

MR. ADAIR: I have no objection.

MR. McCORMICK: I think it is better order to wait until after you are through entirely.

Q (By Mr. Adair) How many wells has Texas-Pacific Coal and Oil Company completed in the Devonian reservoir in the Bagley Area?

A The Texac-Pacific Coal and Oil Company has completed one.

Q Will you give the geological data to the Commission on that one well?

A The well was completed November 23, 1949, total depth 10,914, with base of the black shale being encountered at 10,721 feet. Based on Schlumberger interpretation, we considered the top of pay encountered 10,770 feet. The well was drilled to 10,824

and a core taken from 10,824 to 874, an interval of 50 feet, of which 47 feet 2 inches were recovered. The well was then cored from 10,874 to 914, an interval of 40 feet, of which 39 feet were recovered. Drill stem tests in the bottom from 874 to 914 showed flowing production, and the well was acidized with 500 gallons of mud acid and 5,000 gallons of regular acid, completed with an initial potential of 2848 barrels, or at the rate of 202 barrels per hour.

Q Did you mention what the casing size was?

A This well was drilled to a total depth of 10,914, and casing was set at 10,765 feet. That was 7" casing.

Q So that if it is necessary to go back into the well, you have a large enough casing to do so?

A That's right.

Q And drill deeper or otherwise?

A Right.

Q Do you have a Schlumberger log of this well?

A I do.

MR. ADAIR: If the Commission please, we offer in evidence the Schlumberger log covering Texas-Pacific Coal and Oil Company State B 1 well, concerning which Mr. Carter has been testifying.

EXAM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "H" was received in evidence).

Q (By Mr. Adair) Do you have a core analysis? Did you have a core analysis made, Mr. Carter, of any part of that core recovery that you have?

A Yes, we cored from 824 to the total depth of 10,914, two cores on which I stated the recovery, and the upper 13 feet of

the core from 824 to 874 was analyzed; and all of the core from 10,874 to 914 was analyzed.

Q Is that the core graph?

A It is.

MR. ADAIR: If the Commission please, we offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibits Nos. "I", "J", "K", "L", were received in evidence).

MR. McCORMICK: Will you have him explain in lay terms just what that core graph shows?

THE WITNESS: The core graph was made by the Rotary Engineering Company of Midland, and it shows the porosity, the permeability on this side, the green being the oil saturation and the red the water saturation in the core.

Q (By Mr. Adair) Now, referring to that core graph, you have varying degrees of porosity and permeability, do you not?

A That's right.

Q Going all the way from dense which would mean impermeable?

A That's right.

Q Insofar as oil is concerned at least, to a permeability of some 170 millidarcies?

A That's right.

Q Now, permeability is generally measured in millidarcies, is that right?

A Right.

Q You have a porosity running all the way from within -- what ranges?

A Porosity ranges from as much as 7 -- no, that's in the upper portion. The upper core shows from 7 percent to approximately 1 percent.

Q Porosity 7 percent to 1 percent?

A The lower section shows from -- the minimum appears to be approximately 3 percent and the maximum 12 percent.

MR. McCORMICK: How does that compare with other pools?

THE WITNESS: Well, I am --

MR. McCORMICK: (Interrupting) I mean, is it good or bad or medium, or what, so far as porosity is concerned?

THE WITNESS: I would say it is approximately average in the type of reservoir that we have here.

MR. McCORMICK: Approximately what?

THE WITNESS: Approximately average for the type of reservoir that we have here. It might be a little higher than average.

MR. McCORMICK: That is the porosity?

THE WITNESS: Yes.

MR. McCORMICK: And the permeability, is that higher? Higher than the average?

THE WITNESS: Well, I am not in a position to give those -- I just don't know. Porosity is in portions.

Q (By Mr. Adair) You qualified your answer by saying it is higher than average in porosity in portions?

A Yes.

Q Now, why did you say that?

A Well, for instance, in dealing with Andrews production, you have got a different type of porosity than you have got in this well in this area.

Q Well, now, referring to this particular well, why would you say that in portions only it was higher than average, or was average? Do you or do you not have a dense zone in your coring in this well?

A We did, extending from 10,830 to 10,874.

Q And by dense you mean there was absolutely no oil or no porosity or permeability within that zone?

A That's right.

Q Do you have with you a copy -- I mean, a portion of the core that was taken out of that dense zone?

A We do.

Q Now, you actually had a portion of this dense section analyzed, did you not?

A Yes, we did, from 830 to 824.

Q What were the results of that analysis?

A It showed no permeability, and porosity of 1 percent or less, and water saturation up to 30 percent.

MR. ADAIR: If the Commission please, we offer this core in evidence.

COMM. SHEPARD. It will be accepted.

(Tex.-Pac. Exhibit No. "M" was received in evidence).

Q (By Mr. Adair) Now, in addition, do you have a piece of the core that was taken out of the bottom of the hole?

A That's right, production 10,913 feet.

Q And you said -- this is the core I have in my hand?

A That's right.

Q And you said this particular area was analyzed, did you not?

A Right.

Q What did that show with reference to porosity and permeability?

A Porosity approximately 6 percent and permeability of about 12 millidarcies.

Q Would you say that was more or less than average for this

type of reservoir?

A Well, based on this core graph, I would say it was less.

Q In other words, based upon the core graph which you have in front of you, it would appear the formation was tightening up down where you bottomed your hole?

A That's right.

MR. ADAIR: We offer this in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "N" was received in evidence).

Q What are these black flakes or streaks in this core, Mr. Carter?

A That is black residual material with flakes of some shale in it.

Q Is that shale permeable?

A It is not.

Q In any event, based upon your coring of this Texas-Pacific B 1 Well, you have found that the reservoir is intercepted by a thick, dense zone and in those portions of the reservoir that are permeable, the permeability varies to a great degree, is that correct?

A That is right.

Q And based upon what you have found in this well, and based upon your comparison of the Schlumbergers of this well and Schlumberger survey of the Amerada B.T.A. No. 1 well, would you say that it is likely that Amerada drilled through a similar dense zone in that well?

A That is possible.

Q In other words, you found coring kicks which you thought you could possibly correlate, or could be correlated?

A That's right. Now, based on those kicks, I don't think they would have had quite as thick a zone, but I do think there was a dense zone in the upper part.

GOV. MABRY: We can't hear.

THE WITNESS: Based upon the interpretation of the Schlumberger, I do not think their zone was possibly as thick as we had in this well, but I do believe that there was a dense zone in the upper part of their reservoir.

Q Of their pay section?

A Right.

Q Now, it doesn't make any difference, does it, how thick this dense zone is, if it is present it is sufficient to stop the migration of oil or the flow of oil, is that correct?

A That is right, if it is present.

Q Mr. Carter, I will ask you what this exhibit is here, that has been marked Texas-Pacific Exhibit "O"?

A That is an overlay contoured on top of the Devonian, the copy of the map, the contour map that is shown as Exhibit "G".

MR. ADAIR: We offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "O" was received in evidence).

Q (By Mr. Adair) I will ask you, Mr. Carter, to place that overlay over the lease ownership map that is marked as Texas-Pacific's Exhibit -- what is the exhibit number on that, Bob?

MR. SCHAEHLE: Exhibit "C".

Q (By Mr. Adair) -- Exhibit "C". Now, your overlay is -- your contouring on this overlay, as you said, is exactly the same as you have it here?

A That's right.

Q And you said when this was offered in evidence, that this is not what you guaranteed that would be found down in the Devonian reservoir, but was a reasonable interpretation of it, as a geologist, based upon the information you have from the wells now drilled in the reservoir, is that right?

A That is right.

Q And you further said that you did feel fairly definite and certain about that portion of the contour map which extends from Texas-Pacific B 1 well down to Amerada Caudle well?

A That's right.

Q That is because you have more controls in that area?

A That is correct.

Q Now, assuming such a situation, without saying that it is so, as is indicated upon this contour map, what do you find with reference to these leases located along this area that I am now drawing within the lines 67-50 contour?

A That would indicate to me that in that band of contours between 6700 and 6750, there would be a possibility of 50 feet of pay within that band in the Devonian reservoir.

Q Going down to what?

A Water.

Q To water?

A Yes.

Q And all leases lying outside this blue band, assuming the correctness of this interpretation, would be dry?

A That's right.

Q All right. Now, let's move this overlay and place it over the mineral fee ownership. (Done). Now, the same would hold true, of course, on that, that the leases outside the blue line or water line would be -- would probably be dry, and the

leases inside would have a chance to produce?

A That's right.

Q Now, applying this contour map to this area right here, what do you fine? First,before you answer that -- there are a lot of little circles on these maps. What do they mean?

A They represent the proposed pattern of the Amerada, for the proposed pattern of spacing.

Q All right. Now, placing this overlay on this map and tracing these contours that we have talked about, and assuming they are no more than an interpretation, but they are an interpretation, what do you find here in the N½NE¼ of Section 2?

A I find that well would be too low to produce in the Devonian.

Q While this tract here, which would be next to it, would produce in the Devonian?

A It could possibly produce. It would be higher than that structure if that interpretation is right. It could produce.

Q It could produce in the Devonian?

A Yes.

Q Now, coming down to this area down in here, what do you find with reference to this 80 acres, this 80-acre unit, which is the E½NW¼ of Section 11?

A I find that based on that interpretation, that the NE¼ of that quarter would have a chance of production in the Devonian, whereas on the center leases in the 40, the SE¼NW¼ would be out of the picture.

Q In other words, following the pattern proposed here at that particular 80-acre tract, you would get a dry hole, while you would have a chance to get an oil well by moving up here?

A That's right.

MR. WEEDER: May I ask a question?

MR. ADAIR: Surely.

MR. VEEDER: I would like to ask Mr. Carter what control he has for contours over here. (Indicating). You have a control here, whereas your control for your contours --

THE WITNESS (Interrupting) That was based on spacing of controus, keeping the same spacing that you would in an area where you definitely do have control.

MR. ADAIR: Mr. Veeder, it may save some time if you will wait until I finish with Mr. Carter, and then ask him any way you want to.

Q (By Mr. Adair) You don't say, Mr. Carter, that this falls off this way for sure, do you?

A No, that is just my interpretation.

Q But you do say it falls off somewhere?

A Right.

Q And some way over here? (Indicating).

A Right.

Q And you do say that through here, you are fairly certain of your work?

A That's right.

Q Let's take the overlay off and place it upon the map on which Mr. Christie drew the circle there. (Done). Now, Mr. Carter, this circle was assumed by Mr. Christie in a rough manner, to represent the drainage area of the State BTD well No. 1. Now, looking at that circle through the overlay, and looking at the fixed- pattern location, which is right there in the S½ -- it is not on the map, so we will put it there. You find, do you not that by fixed-pattern spacing, you will get a dry hole down here, whereas actually you would get some oil up here?

GOV. MABRY: Better identify your location there.

MR. ADAIR: Yes.

THE WITNESS: SE¼NE¼, Section 11, based upon that interpretation, would not produce. It would be dry in the Devonian, whereas, the NE¼NW¼ of Section 11, based on this interpretation, would have a chance for production in the Devonian.

Q (By Mr. Adair) And B.T.D. well would drain some oil from underneath this tract to which you have referred, which will not be compensated for along the lines that Mr. Christie talked about, by draining on fixed-pattern spacing?

A I believe that's right, providing that is his interpretation of unitization. I think that's right.

Q All right, Mr. Carter. Will you come back around. Now, Mr. Carter, I refer you here to what has been marked as Texas-Pacific Exhibit "P", and ask you what that represents?

A That is a cross section from southwest to northeast, through the Amerada Caudle, the Amerada B.T.D., the Amerada State B.T.A., Texas-Pacific Coal and Oil Company, State B 1; and east to the Mid-Continent State No. 165, Pennsylvanian producer.

Q Now, that cross section is cut across the line that is shown in blue in Texas-Pacific Exhibit "O", -- that piece of acetate there?

A That is true.

Q The line runs from "A" to "A" prime, and on the piece of acetate is a red line of that cross section?

A That's right.

Q What do these colors across the top represent?

A Those colors indicate the ownership lease, ownership in the Bagley Area, the red being the Amerada acreage, the organge or the yellow, the Texas-Pacific, and the brown, the Mid-Continent.

Q The next colors across the exhibit, what does that mean?
A That is the fee ownership, or mineral ownership.
Q Explain that, please.
A The orange is the federal; the green, the individual; the blue, the state.
Q And the brown lines running down through the exhibit, what do they mean?
A They are property lines.
Q Separating the various leases and/or mineral fee ownership?
A That's right.
Q Now, will you explain what these various interpretations down this way mean?
A The base of the dark blue and the top of the light blue is the top of the Pennsylvanian formation, as interpreted by us, by the T.P. Coal and Oil Company. The blue is all Pennsylvanian down to this point, which is the top of the Mississippian lime. This next zone is the top of the black shale at the base of the Mississippian line; and this line is the base of the black shale, or, as I believe from the testimony this morning, is considered the top of the Devonian by the Amerada.
Q What have you considered the top of the Devonian in this interpretation of this c ross section?
A I have considered the base of the black shale.
Q No, I mean, what you considered the top of the Devonian?
A Well, I have considered it down within, below the base of the black shale, based on sample interpretation and electric log interpretation.
Q I simply point that out as there is some difference between you and Amerada's geologist in picking the top of the Devonian strata. The area delineated in red down at the base of our map

is the area which the Amerada has considered as the pay section through the well, is that right? You heard their testimony?

A I believe -- I wouldn't know whether that exact top is the top of their considered pay.

Q Will you go over to the Texas-Pacific B 1 well; and you find a box down around the bottom of it. Will you explain that box and explain the enlargement?

A This is an enlargement of cored section of the State B well, in other words, from a depth of 10,824 feet to a depth of 10,914 feet.

Q Just a minute. You don't mean to say all of this was cored? Your coring actually started somewhere in here?

A Yes, it was from a depth of subsea datum 8651 to a depth of minus 6755, is the way we considered the water level.

Q That is assuming a uniform level water table throughout the field?

A That's right.

Q What does this greyish colored area represent?

A Dense zone, which we cored from 10,830 to 10,874.

Q And which, from the interpretation of Schlumberger logs, you feel was found in Amerada's log to possibly some lesser extent?

A Possibly so.

Q In the B.T.A. No. 1 well?

A Yes. There is a kick that is indicative that it could be the same zone -- same dense zone as we found.

Q And I believe you testified, did you not, Mr. Carter, that from your information, your examination of the well sample, the sample log, as well as your examination of the core and core analysis, that there was no uniform permeability through-

out the pay section?

A Yes, that is based primarily on the cored section, plus the interpretation that was put on the electric log as seen opposite that core section.

MR. ADAIR. All right. We wish to offer this in evidence.

COMM. SHEPARD: It will be admitted.

(Tex.-Pac. Exhibit No. "P" was received in evidence).

MR. ADAIR: That is all.

CROSS EXAMINATION

Q (By Mr. Kellough) Mr. Carter, since you have the cross section on top, I want to ask you a question about that. With reference to this box arrangement here, if it perforated the whole section you could recover the oil from both of those areas indicated in red, could you not?

A You could recover it opposite those preforations in those red zones. There will be no object in recovery in the dense zone.

Q You are not contending that you need to drill an extra well in order to cover this by one well, and this by another well, are you?

A No, sir.

MR. McCORMICK: You are referring to Exhibit "P", for the record.

MR. KELLOUGH: For the record, I might state, the two zones I was referring to are shown in the box in red.

Q (By Mr. Kellough) Now, referring to Exhibit "E", this I believe you stated was a contour of the Glorieta Sand?

A As we interpret it, it is a contour of the Glorieta Sand.

Q That is not the Devonian?

A No, it is not.

Q And that is not a sand or formation that is involved in this hearing here, is that right?

A No, sir.

Q I also refer you to exhibit marked "F", that "F", I believe you stated was a contour of the Pennsylvanian formation?

A That's right.

Q And that is not the Devonian?

A No.

Q And that is not any formation referred to in this proceeding?

A That's right, so far as I know.

Q You also introduced in evidence a core analysis of T.P. well.

A That's right.

Q And I understood you to state that core analysis did not show a uniform porosity or permeability of the reservoir, is that correct?

A That is correct.

Q But did you also state that it did not show any continuity?

A I did not state that.

Q And I believe you testified that the core analysis showed a condition which is characteristic or average, I believe, was the word you used, of all Devonian Pools?

A To my knowledge.

Q To your knowledge, and in certain parts it was superior, I believe you testified?

A What?

Q And in certain sections it was superior?

A That's right.

Q Now, referring to Exhibit T. P. "O", which you interposed on Exhibit "P" and on the two exhibits showing the royalty and lease ownership over on the board. It is true, is it not, that in any oil field, regardless of the spacing pattern, that you will also have edge wells?

A I'm not --

Q (Interrupting) You will always reach the edge of pools at some time?

A I'm not a reservoir specialist. I'd rather not answer the question. I would rather that would be referred to an engineer.

Q Well, you have testified with reference to the drainage of this well, have you not?

MR. ADAIR: He testified with reference to the drainage area as delineated by Mr. Christie.

Q (By Mr. Kellough) Can you explain to the Commission how any spacing pattern will prevent a well from draining across a lease line?

A No, I can't.

Q It is not your position that a spacing pattern should be developed and based according to surface ownership, is it?

A Will you state your question over?

Q Are you taking the position that a spacing pattern should be developed according to lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness has taken any position with reference to that at all. If Mr. Kellough wishes to make him his own witness in that matter, it is perfectly all right. But I wish to call the attention of the Commission to the fact that he has not testified on that point at all.

GOV. MABRY: Well, he is probably entitled to ask him.

He is testing his conclusions as a geologist.

MR. ADAIR: All right, sir.

A You are asking if I am in a position to testify that those spacings should be placed on surface-acreage pattern, is that the way you worded it -- surface spacing?

Q In your testimony, I believe you endeavored to show, and prepared a number of exhibits to show that according to the spacing pattern which is being asked for at this hearing by the applicant, that it would result in the drilling of certain dry holes?

A That's right.

Q And also by the preparation of these exhibits and by the reference of counsel to the drainage area shown, you also, as I understand your testimony, infer or attempt to leave with the Commission the impression that a well will drain some oil from under somebody else's lease?

A In that instance, it would drain some oil from under somebody else's lease.

Q Now, then, will you explain to the Commission first, how you can avoid drilling dry holes by arranging the spacing?

A By structural position, if you have correct structural position. I'm not saying you won't drill dry holes, because all this is, is an interpretation up here. It was not exactly brought out, but using that as a basis, and if that be fairly correct, then wells drilled within -- outside of the blue line zone here, in all probability would be dry. They would be too low, assuming you have a level water table.

Q That's right. Now, that location you referred to of the proposed leases in the E/2NW/4 of Section 11 --

A (Interrupting) That was the location south?

Q South of the water line.

A Yes.

Q And you testified that a well drilled in that location would, in your opinion, result in a dry hole?

A If my interpretation of the structure is right.

Q Now, you heard the testimony of witnesses for the applicant this morning?

A Yes, sir.

Q Now, in your opinion, is there anything in their testimony which would prevent, if those circumstances are true, the drilling of a well in the N½ of that particular unit?

A I'm not familiar -- I haven't looked at the map this morning, on the north-south line-up that you had, and what your exceptions were going to be on the east-west line there. You said there would be some specific exceptions there.

Q Did you hear the testimony that in event of -- for good cause shown, and an exception is subsequently desired, that it was our recommendation that such an exception be allowed by the Commission?

A I did.

Q And did you not hear the further testimony that in that event, it was our recommendation that the Commission, under the facts which then exist, determine to what extent the allowable should be reduced?

A That's right.

Q Now, is it your position that a unit, whether it be 40 acres or 80 acres, which contains non-productive acreage, should receive the full allowable?

A In that particular instance where you have got a 40-acre unit, the low water table as assumed, and with structural in-

formation to definitely confirm that, I would not think so. But that would be contingent upon information that would show that.

Q Then, it is your opinion that if a unit does contain non-productive acreage, it should receive a reduction in allowable, am I correct in that statement?

A Well, if you are -- as you have implied, we will assume the 80 acres for a well. I would think that the 40 acres -- all this is contingent upon the fact that the structural position would show that the other 40 acres was definitely out -- would be definitely dry.

Q Now, assuming that to be true, would it be your contention that a unit containing 40 acres of non-productive and 40 acres of productive, should receive a full allowable? Do you contend that should be done?

A In other words, you are asking me --

Q (Interrupting) I'm asking you if you should reduce the allowable because there is any non-productive acreage within a unit.

MR. ADAIR: An 80-acre unit?

Q (By Mr. Kellough) Either 40 or 80-acre unit.

A If there is any -- whether the allowable should be reduced?

Q That's what I'm asking you, assuming, you know, that it is non-productive?

A I wouldn't think so. I wouldn't think that it should be reduced.

Q You would think that an operator or a person is entitled to receive the same amount of oil?

A That's right.

Q From a unit which is in part non-productive and is a person

who has a well upon a unit all of which is productive, is that your testimony to this Commission, is that correct?

A That is correct.

Q All right. Now, then, if this field pool were developed on 40 acres, would there be any unit that would be partially non-productive?

A There probably would be. I would have to throw up that acetate and see. I would like specific instances.

Q Well, as a matter of fact, there would be, wouldn't there?

A Well, there probably would, but I don't know. I mean, I would rather have a specific instance there that you would like to ask me about -- my opinion.

Q I'm asking you whether, under the structure, your map which you have prepared, if that was developed on 40 acres, would there be any unit which would contain in part non-productive acreage?

A Based on that, this portion would right here (indicating), of that 40 acres.

GOV. MABRY: The witness said, "right here," pointing his finger at something.

THE WITNESS: It is the E½SE¼NW¼ of Section 1, 12 South, 33 East.

Q (By Mr. Kellough) In other words, were this developed on 40 acres, you would have some units which would contain non-productive acreage?

A That's right.

Q So that it would not correct the situation which you testified about to change the spacing pattern, is that right?

A I wouldn't think that; you would be reducing your amount of acreage that would be non-productive, whereas you would have a

chance to -- a change on State-wide rules of placing that on the 330 location, as the State-wide rules now apply.

Q Now, referring once more to Exhibit "O", as superimposed on Exhibit "B", it was the purpose of your testimony to convey the impression to the Commission that this well would drain, the B.T.D. well, from under leases owned by other parties than the owners of that well?

A That is based upon your engineer's testimony, as that being the drainage pattern.

Q Now, that would not be corrected by drilling one well to every 40 acres throughout the field, would it?

A In this particular instance, it would be corrected.

Q But you cannot correct or change the drainage in an oil field by the density of spacing?

A You cannot change the drainage, no, sir.

Q Is it or is it not your opinion that well spacing should be based upon lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness is qualified or has been qualified to answer that. He is not an engineer. He qualified as a geologist.

MR. McCORMICK: Are you qualified to answer that?

THE WITNESS: I'm not qualified as an engineer, no, sir. I think that would fall within the reservoir study.

MR. McCORMICK: Do you have anything you wish to state on this subject?

THE WITNESS: No, sir.

MR. McCORMICK: No opinion you wish to state on this subject?

THE WITNESS: None I wish to make.

MR. McCORMICK: Nothing you could back up, is that right?

THE WITNESS: That's right.

MR. KELLOUGH: I believe that's all. I have no further questions.

COMM. SHEPARD: We will take a five-minute recess.

(Whereupon, at 3:30 p.m., a recess was taken, the hearing being re-convened at 3:40 P.M.).

MR. SPURRIER: Are you ready?

MR. ADAIR: If the Commission please, I had one or two more questions of Mr. Carter.

REDIRECT EXAMINATION

Q (By Mr. Adair) Mr. Carter, I'm afraid you might have left the wrong impression in answer to Mr. Kellough's question awhile ago. Is there or not continuous permeability through the pay section of the Devonian reservoir in the Bagley?

A There is not, based on the dense zone we have found.

Q Second, do you as a geologist, see any reason why you should get away from the State-wide rules at this time in the development of this Bagley Devonian reservoir?

A I see no reason whatsoever.

MR. ADAIR: That's all.

MR. McCORMICK: Mr. Morrell, do you have a question you wanted to ask Mr. Carter?

MR. MORRELL: I wanted to ask Mr. Carter, why the bulge in the south end of the structure as you had interpreted it?

THE WITNESS: On the Devonian?

MR. MORRELL: On the Devonian.

THE WITNESS: You pull it down from the B.T.D., with a subsea datum amounting to minus 6615, to the Caudle amounting to minus 6749. The spacing is coming off from here (indicating) to here, and increases down this way, which necessitates pull-

ing the contours down to make this point.

MR. MORRELL: Is that the -- that is a mechanical interpretation? It doesn't necessarily follow the geological evidence?

THE WITNESS: Well, Mr. Morrell, I don't know whether I understand you or not.

MR. MORRELL: Did you generally find the structure with a bulge on one end of your closure to the high as the limit?

THE WITNESS: That's right.

MR. MORRELL: Normally, as you go down-structure, that same elipse would be reflected?

THE WITNESS: I think this is the most conservative manner of contouring.

MR. MORRELL: Well, I would agree on that. It is ultra conservative.

THE WITNESS: That was my statement.

MR. McCORMICK: Any other questions?

MR. KELLOUGH: No further questions of this witness.

MR. SPURRIER: Mr. Carter, just for information, of course, how did you determine this water contact?

THE WITNESS: That was based on the B.T.A. well, which, after they ran pipe, 11,200 approximately -- that I'm not positive of -- about these figures. They tested from 11,010 to 11,020, and these are rough figures. You have the figures somewhere in the testimony -- they got 4,000 feet of oil plus 6,000 -- excuse me, I mean 600 feet of water. Then they plugged back to 10,980, perforated and got all oil from, I believe it was from 956 to 80, is that right?

MR. VEEDER: No, perforation from 950 to 965 they tested there.

THE WITNESS: Anyway, the interpretation was based on tests where they got the water.

MR. SPURRIER: Then, did I understand you to say that your cores, or the core, I guess I should say a-

THE WITNESS: (Interrupting) There were two cores.

MR. SPURRIER: You stopped taking the bottom core at what you considered to be the water-oil contact?

THE WITNESS: No, I didn't.

MR. SPURRIER: That was strictly a misunderstanding, then.

THE WITNESS: Yes.

Q (By Mr. Adair) Is it true that on the map here, no matter how high your hole at the bottom, above to where you assume the water-oil contact to be is represented by that dash, the red section there in the box?

A Yes, that's right.

Q And from minus 6671 to minus 6675 would be 4 feet?

A Yes, it would be four feet.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other questions of this witness? Your next witness, Mr. Adair.

R. G. SCHAEHLE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Mr. Schaehle, you have testified and qualified before the Commission, before, have you not?

A Yes. That is R. G. Schaehle.

Q Mr. Schaehle, I hand you here what is marked as Texas-Pacific Exhibit No. "Q". We'll put it up on the board. (Done). I will ask you to explain to the Commission please, what that

represents?

A That is a generalized or schematic section, cross section through a water-drive reservoir.

Q Based upon what assumptions, Mr. Schaehle?

A There are several assumptions to make. First, let me say this does not apply by scale to any specific area, or it does not follow this cross section. There are certain assumptions here. One, the uniform porosity and permeability throughout, which we wouldn't have here, but uniform porosity and permeability is assumed. That assumption is like taking a set of marbles, all uniform, all the same size, and you would have a number of toys exactly alike. Further, it was assumed that the oil-water level, or oil-water contact is level. On this thing then we show 5 wells through there, through property lines. In addition to that we have put an idealized faulting on one flank. That is this line here, showing an off-set. Then, you see a heavy blue line at this point. Let us say first, under initial conditions, everything above this line marked, "Water line," was oil bearing in this typicalized section; that after the period of production, the water has moved vertically in this particular section, assuming the wells are produced correctly, and after some ex-period of production, it has reached this point.

Q By "this point" you mean --

A (Interrupting) Indicated by this line, and this is the water line after period of production, and this hatching here shows that recoverable oil has been withdrawn and been replaced with water.

This section shows certain features, shows flank on moderate or edge wells exemplified here and intermediate wells, and

a crestal well.

Let me call your attention to the property line which comes down through here. This edge well is washed out. It is done, when the water level gets to here.

Q There again is the same point that is marked there on the map as what?

A As water line after period of production.

Q Now, assuming that you took this edge well, Mr. Schaehle, and assuming that it is located in the center of the 40 as proposed by these rules --

A (Interrupting) That's right.

Q Will you assume that you have moved that well up within the 330 feet of your property line and will you demonstrate and explain to the Commission what happened?

A There the well, located in the center of a 40 of a fixed pattern, it could be there, down-structure, on an 80, after it is exhausted there and done, it leaves this much oil bearing formation, this much oil, that will never be recovered by this well.

Q That is the oil that was under that particular piece of property?

A That's right. If it is ever rec overed it is going to migrate across property lines, as has been testified. However, if this is moved under -- let's say 330 feet, or applying State-wide standard rules at the present time, this well will be in this vicinity when it is drawn up. That well would continue to produce until this water level has gone to this point.

Q To the point which you have marked there with your pencil?

A That's right; and they would recover in addition, this much more oil that was under this property.

Q All right, Mr. Schaehle. Now, we can see down below that the oil-bearing portion of the Bagley Area, the Bagley reservoir, as indicated in Texas-Pacific Exhibit "P" -- now does that same situation that you have been talking about, moving the well up-structure to within 330 feet of the property line, would that apply anywhere on Texas-Pacific Exhibit "P"?

A Yes, it would apply several places. This, I assume is the location being drilled, and since they are all on circles, a well is located mid-ways. This is the property line, from here to there. At this point (indicating), you would probably get additional oil to what this well can produce.

Q And that would apply anywhere --

A (Interrupting) In here, the same in here.

Q A nywhere down-structure side of the reservoir?

A Anywhere you got off the crest of the structure.

Q All right, sir. Is there anything you wish to show or explain to us with reference to this generalized cross section?

A I haven't mentioned this fault. I believe the testimony earlier in the day was probably something like this. There is an idealized fault, a text-book thing. This well drilled down on the side exhausted this volume of oil, and it was washed out, and all the rest of the time, this amount of oil, from here to there has been gone.

Q You say, "from here to there," you are talking about the oil from the east, on the map?

A From the up-throw side of the fault right here. This oil that is under this piece of property has been produced by a well somewhere up-structure.

Q In other words, the property owner will -- we are assuming that well is located in the center of a forty, and assum-

ing that by moving 330 feet of the property line you can get on the up-side of the fault?

A That is correct.

Q That property owner under these circumstances here is losing a tremendous quantity of oil that will never be produced through his well?

A That is correct.

Q I will ask you this, Mr. Schaehle. Is there any reason as an engineer that you know of, why the Bagley Devonian reservoir should be at this time developed on any other basis, other than under the present State-wide rule?

A I do not.

Q Do you think -- in your opinion, do you believe that one well to 80 acres as proposed here will effectively drain all recoverable oil under the 80 acre tract, or under 80 acres of oil if you want to put it on that basis, in attempting to get away from correlative rights and move -- say you got Jim Doe's oil, some of his oil, and he got some of yours. In any event, one well, regardless of how it is located, will not, in your opinion, regain effectively all recoverable oil under 80 acres?

A No, it won't. It will not.

Q You base that opinion upon both the geological and engineering data that has been available to you and which you have heard here today?

A I do.

MR. ADAIR: I believe we have no further questions at this time. I would like to offer this exhibit in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "Q" received in evidence).

MR. McCORMICK: Any questions that anybody else has of Mr. Schaehle?

MR. ADAIR: If the Commission please, I would like at this time to make sure I have introduced all exhibits -- that all exhibits I have introduced are offered in evidence.

MR. McCORMICK: All of the T.P. Exhibits, from "A" to "Q" have been admitted in evidence.

MR. ADAIR: Thank you.

MR. McCORMICK: Mr. Adair, Mr. Spurrier wants to ask you some questions.

MR. ADAIR: Yes, sir.

MR. SPURRIER: Does the record show that you just showed that 80-acre spacing would limit correlative rights?

MR. ADAIR: No, I didn't intend to leave that impression. The impression I got from the Amerada questions and answers was that they were disregarding property lines in fixing their drainage pattern and drainage area, and I questioned whether or not that was proper.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other witnesses, Mr. Adair?

MR. ADAIR: No further witnesses.

MR. KELLOUGH: I would like a five minute recess, and I believe we would like to put on a rebuttal witness.

COMM. SHEPARD: Very well. We will have a five-minute recess at this time.

(Whereupon, at 4:00 o'clock, P.M., a recess was taken, the hearing being re-convened at 4:05 o'clock, P.M.).

COMM. SHEPARD: The hearing will come to order.

REBUTTAL

C. V. MILLIKAN

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Kellough) Will you please state your name and occupation to the Commission?

A My name is Millikan -- initials C. V.

MR. SPURRIER: Mr. Millikan has qualified many times for the Board. It is not necessary to qualify him.

MR. KELLOUGH: All right.

Q (By Mr. Kellough) Mr. Millikan, in your opinion on this Bagley Reservoir, will one well adequately and efficiently drain an area of at least 80 acres?

A I believe it will.

Q Would you care to make any statement to the Commission in explanation of your conclusion?

A I think we have several points that indicate that it is a good water-drive reservoir. I don't believe there has been any controversy of the testimony that it is a rather -- that it is permeable, I would say more-than-average permeable reservoir. As a general rule, we find that low gas-oil ratios are present where we do have a good water drive, that in itself not being conclusive, however; but as a general rule that condition does exist.

We have a pressure there that is about equal to hydrostatic head and about normal for that depth of reservoir. We have found a good quantity of water to the side and below the oil reservoir itself. The indications, I believe, are fairly good that we have a large aquafer, although we don't have sufficient control to demonstrate it definitely. We have, also, some other pools established in that same stratographic position that is the top of the Devonian in this general area, and on two of those, I think we have evidence of a good water drive. One of those is Cross-

roads. I am not familiar too much with the detail of that, but it is my understanding there has been no declining pressure in the approximate year and a half that those wells have been in. I believe two of them are producing some water and the dry holes that have been drilled around them have shown evidence of an ample quantity of water. That also has a low gas-oil ratio, but not as low as is present in these Bagley wells.

This field on which we have more history is just across the state line in Texas, in which there are eight wells in the field, which has been developed on 80-acre spacing, and that pressure under an allowed of 240 barrels a day on the 31 a day allowed, did have a little decline in pressure;earlier this year when the production was reduced we had an increase in pressure, during the first eight months of this year. I think, combining all of that gives very good evidence that it is quite reasonable to expect a good water drive in the Bagley.

Q Mr. Millikan, do you have any comment which you wish to make to the Commission with reference to the testimony regarding the dense areas which appeared in the core analysis introduced by the Texas-Pacific Coal Company?

A Well, those dense areas are, I think, as they stated, not anything unusual in these Devonian reservoirs, or for that matter in lime reservoirs, or for that matter, in any reservoirs. We have areas or intervals or stratums of varying permeability, and very often the strata is of greater or lesser thickness that might not even show any presence of oil, which I believe in our examination of samples heve rather consistently shown oil and I think the permeabilities have been, perhaps, too low to get any appreciable amount of oil. I think probably some of

the testimony might be a little misleading regarding continuous or discontinuous, or uniform porosity and permeability. I think, it seems to me, in summing it up that there was not a clear distinction between vertical permeability and horizontal permeability.

Now, it is quite true, as was testified, I believe, by Mr. Schaehle, or Mr. Carter, or perhaps both, that where we run into these dense areas, that we probably do not have vertical permeability through those. In other words, this water that exists apparently entirely under this structure -- the water movement is not directly vertical. I don't believe the point was made clear, but I think that we do have lateral permeability through this reservoir. In the first place, that is a common thing to expect in reservoirs. We have that in all reservoirs, and I think the concrete evidence of that is the fact that we do have an accumulation of oil above water, with such evidence as we have being that it is a a relatively flat or level water table. And if we didn't have a continuous permeability through there, then how did the oil all get up there just in this, as someone referred to this morning, equivalent of a bowl turned upside down. And if we are going to have a water drive, which I think all have indicated probably exists -- and if you are going to have a water drive, you have got to have that continuity of permeability throughout the reservoir.

Q I have one further question, Mr. Millikan. Do you have any comments which you care to make as to whether the 80-acre spacing pattern, which has been proposed by Amerada, will result in a disruption of the correlative rights of the parties in the pool, which could be remedied by any other spacing program?

A I do not see that 80-acre spacing, or 160-acre spacing, or

40-acre spacing or 10-acre spacing, changes that picture at all. Certainly we have -- in any oil pool, we reach the edge of the pool, and we find certain parts, whatever the spacing unit may be, that probably lie beyond the limits of oil production, or beyond the limits of economic oil production. There may be some oil there, but it is not economic to drill. Then, that is, for all practical purposes, it becomes the limit of the pool. And there were no land lines there when that oil pool was formed. They have been put there subsequently, and they, as a general rule, are curve lines, as has been indicated in the testimony here; and regardless of the spacing, I think that those same conditions will exist. And the fact that we cannot recover all of the oil by 80-acre spacing, I don't see that it introduces any problems that wouldn't exist under any other spacing unit.

Q Then, in your opinion, the spacing pattern which we have presented here will not prevent any of the owners in that reservoir from obtaining their fair and equitable share of the oil in the reservoir?

A I think that under the recommendations that we have made here as to spacing and allocation, they will provide each operator, each land owner, each royalty owner, the opportunity to obtain his fair and equitable share of the oil from the reservoir.

MR. KELLOUGH: That's all.

CROSS EXAMINATION

Q (By Mr. Adair) Mr. Millikan, do you know what the virgin bottom-hole pressure in this reservoir was?

A About -- I believe according to Mr. Christie, it was 4261.

Q For your information, and Mr. Schaehle can verify this, the bottom-hole pressure in our well was 4390.

A What depth?

MR. SCHAEHLE: We may be able to correct that. It is -- 24 feet from total depth of State B 1, is 10,890.

THE WITNESS: Well, that would show a little higher pressure than ours, reduced to the same datum.

Q (By Mr. Adair) Well, reduced to the same datum, what would 4390 be in the B.T.A. well?

A 44 -- about 4407.

Q 4407, and Mr. Christie testified that after 4 months' production, the bottom-hole survey was run, and what was the bottom-hole pressure?

A 4247.

Q Will you subtract those and give us the drop of the pressure -- the drop of the bottom-hole pressure in 4 months' production from your B.T.A. No. 1 well?

A Now, you want the difference in pressure?

Q The drop in pressure.

A You want the difference?

Q Assuming you converted our 4390 to whatever it was for your B.T.A. well, did you not?

A I'm assuming your pressure is correct.

Q And assuming our pressure is correct.

A That would be a decline of 260 pounds.

Q In four months' production?

A And assuming your pressure is correct.

Q Is such a decline alarming?

A Not to me, because I don't believe it exists that much. Our own pressure, taking the same pressure element, gets a variation of difference in pressure in the well there on the order of a quarter and a half of a percent.

Q You don't mean to say, at the same subsea datum point in the

reservoir that the pressure would be different, would you?
A I'm maintaining they will be the same.
Q Then what you don't have any confidenc e in is our bottom-hole pressure, is that correct?
A Well, I don't think I would go that far. Maybe our pressures are wrong. But at least, they were taken with the same instrument and relatively they ought to be about correct.
Q Well, assuming such a drop, would that not indicate that the water drive is not as effective as you have --

MR. KEELOUGH (Interrupting) Well, he is asking the witness to assume a set of facts which the witness has said does not exist, or rather, which the witness did not admit.

MR. McCORMICK: That is improper --

GOV. MABRY (Interrupting) We can't hear counsel. We can hear the witness clearly, but not counsel.

MR. ADAIR: Sorry, Governor. I asked Mr. Millikan to correlate the bottom-hole pressure found in our well to be 4390 pounds, into the pressure he would expect to find in his well at his depth, and he got a pressure of 4407 pounds, I believe. Mr. Christie testified that after four months' production, they took a bottom-hole pressure in the B.T.A. well, which is the well we are talking about; and he found it to be 4200 and what?

THE WITNESS: 47 pounds -- 4247 pounds.

MR. ADAIR: 4247 pounds, a decline in pressure, not based upon assumption, but based upon actual pressures found at the subsea datum of the B.T.A. Well, resulting in a decline of pressure of how much? How many pounds, Mr. Millikan?

THE WITNESS: Well, the difference in pressure is 260 pounds.

MR. ADAIR: A decline in pressure of 260 pounds after four months' production.

THE WITNESS: But that is not the decline in pressure, in my opinion, because the decline which we found between our original pressure and the pressure after four months production, was only a difference of 14 pounds, taken at the same level and with the same instrument, which is as close as you can read pressures at a pressure -- that is, as close as the instrument can be read.

Q (By Mr. Adair) Now, my next question, to go on, Mr. Millikan, either you or anyone who knows, Mr. Kellough, can answer. To save time, I don't want to have to read the application of Amerada here. Will one of you tell me whether or not your application for this hearing made any request for definite 80-acre units such as you have asked for today, based upon the east and west 80s of a 160-acre tract?

MR. KELLOUGH: The application speaks for itself and the testimony is all in.

MR. ADAIR: I was trying to save time. I guess I'll have to read it.

GOV. MABRY: Somebody can tell us that. Your testimony is in. What did you show?

MR. McCORMICK: The application speaks for itself.

GOV. MABRY: True enough. and we'll get into that if you don't know.

MR. ADAIR: That's perfectly all right.

MR. KELLOUGH: The application asked for 80-acre proration units, and we did not, in the application, recite the description of the particular units, but we did describe the location of the wells which we were asking, or requesting the

hearing on.

MR. ADAIR: That answers my question perfectly. Thank you.

Q (By Mr. Adair) Now, Mr. Millikan, will you refer to the T.P. Exhibit on the far left over there, No. "C"? If you will refer to the T.P. lease shown here in yellow, which is shown on this map as being T.P. Lease, NO. 211, being the E½NW¼ and the NW¼NE¼ of Section 2, 12 South, 33 East, you will see from that Exhibit that that is all one lease, will you not?

A That is the way you show it on the map.

Q Well, assuming that to be true, Mr. Millikan, based upon your application as originally filed, is there any reason why T.P. cannot form its 80-acre unit out of these two quarter sections of 240-acre tracts, which would be the NE¼NW¼ and the NW¼NE¼ of said Section 2?

A Is there any reason why that can't be done?

Q Yes.

A I don't know of any.

Q Still, here you come in today with your Exhibit "C", Amerada Exhibit "C", or your map, and request that -- first let me say the testimony shows, if the Commission please, a well now being drilled by T.P. at this point, which is now 4,000 feet deep, or more; and your application here -- and what I'm getting at is that you have stated in your testimony that you thought this was fair from the standpoint of correlative rights to the operators. You have requested that the T.P. take in Amerada, which owns this lease, the NE¼NE¼ -- as a partner, and form an 80-acre unit, taking the 40 acres off of the 120 acres which we had there, together, and form with Amerada an 80-acre unit as shown by our dotted lines here on Amerada Exhibit No. 1.

A That was our recommendation. We did not say it was a request. That was our recommendation only.

MR. ADAIR: The notice of this hearing, if the Commission please, if I may so state, which did not, in my opinion, encompass a pooling or a unitization hearing; and the result of the adoption -- the result of such a proceeding by Amerada here, if adopted, would be the first step for such a request for unitization. We have conformed, if the Commission please, in drilling of this well, to the proposed pattern. At the time we started the well, we had no idea at all that they would ask for east 80s and west 80s of quarter sections. We have 80 acres up there.

MR. McCORMICK: Mr. Adair, the application asks only for 80-acre spacing, and this tendered Exhibit here, No. 1, I believe, merely suggested a pattern; and the Commission, if it should adopt 80-acre spacing, could adopt that pattern, or any other pattern it wanted to work out.

MR. ADAIR: I'm just pointing out the Amerada proposal that they proposed for the pattern to be formed as shown on the Exhibit, which would require unitization.

MR. McCORMICK: That's right.

Q (By Mr. Adair) Mr. Millikan, if I may direct your attention here to the Texas-Pacific Exhibit No. "O" --

A (Interrupting) As superimposed on Exhibit "B"?

Q Yes, sir. Referring here again to Texas-Pacific well C.S. 1, which is now drilling, and Amerada's 40-acre tract immediately to the east, would you say that, assuming this contour map to be correct, would you say there was as much oil under the Amerada 40-acre tract as there is under the Texas-Pacific 40-acre tract?

A I don't know. If you want to make some point of that, why, I'll take either side of it.

Q I am not referring to taking some point of it, Mr. Millikan; I may ask you a question. Assuming the contour lines are correct, would you say or wouldn't you say there was less oil under the Amerada tract than there would be under the T.P. tract?

A Well, I think the point you make, Mr. Adair, that you --

Q (Interrupting) Well, can you answer the question, Mr. Millikan?

A No, I can't answer directly; but I would say there is a possibility there may be less.

Q Thank you.

MR. ADAIR: That's all.

A (Continuing) Is that all that you wanted? But there, that same thing might apply to any other set of contours that may be assumed or eventually proven in regard to that lease or any other lease in the field, the same as it exists in any other field in New Mexico, or in any other part of the country.

Q That's right. Well, while we are talking of fields in other parts of the country, other than the B. T. A. or the Hightower area, other than the Crossroads area and other than the Jones Ranch Field that you mentioned in Texas, do you know of any other Devonian field in New Mexico or Texas that has been developed on 80 acres fixed-pattern spacing?

A No, I don't have knowledge -- I don't know of any others, but I think probably there are others that would be just as well off had they been developed on 80-acre spacing. The mere fact that they have been developed on 40-acre spacing is not prima facie evidence that they may not have been developed with

equal equity on 80-acre spacing; nor does it also prove that they might not have done better had they drilled on 10-acre spacing.

MR. ADAIR: Thank you, sir. That's all.

MR. KELLOUGH: That's all.

MR. McCORMICK: Any other rebuttal witnesses?

MR. KELLOUGH: No.

MR. McCORMICK: Does counsel wish to make a summation?

MR. ADAIR: Texas-Pacific does, yes, sir.

MR. KELLOUGH: Yes, I think so.

MR. McCORMICK: Do you want a slight recess to prepare?

GOV. MABRY: Take a four or five-minute recess if you want to.

(Whereupon, at 4:30 o'clock, P.M., a recess was taken, the hearing being adjourned following statements by counsel).

I HEREBY CERTIFY, That the foregoing transcript of proceedings before the Oil Conservation Commission of New Mexico in Santa Fe, New Mexico, on December 20, 1949, is the true record of such proceedings to the best of my knowledge, skill, and ability.

Dated at Albuquerque, New Mexico, this 27th day of December, A. D. 1949.

Ruth Warden
Reporter.

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

PROCEEDINGS

The following matter came on for consideration before a hearing of the Oil Conservation Commission of the State of New Mexico, pursuant to legal notice, at Santa Fe, New Mexico, on September 8, 1949, at 10:00 A. M.

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, of the following public hearings to be held September 8, 1949, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

> Beginning at a point 660 feet west of the southeast corner of NE/4NE/4 of section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico.

Case 192

In the matter of the application of Gulf Oil Corporation for an order authorizing dual completion and production from the Yeso formation (Drinkard pool) and from the Ellenburger formation (Brunson pool) from a single well bore in the Eunice King No. 17 well, located 660 feet from the north line and 2310 feet from the west line (NE/4 NW/4) of section 23, Township 21 South, Range 37 East, N.M.P.M., in Lea County, New Mexico.

Case 193

In the matter of the application of Shell Oil Company for a special exception from the provisions of Order No. 72 relating to central tank batteries with respect to State oil and gas leases E-1830, B-9446, B7849 and E-276 under conditions existing in the West Wilson pool, Lea County, New Mexico.

Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office, to amend Section 3-A of Commission Order #784 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

> "When remedial work on a well has been completed by an operator to correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

By /s/ R. R. Spurrier
R. R. SPURRIER, Secretary

SEAL

BEFORE:

Hon. Guy Shepard, Chairman
Hon. R. R. Spurrier, Secretary

REGISTER:

M. B. Penn
Tulsa, Oklahoma
For Mid-Continent Petroleum Corporation

E. J. Pierce
Midland, Texas
For Mid-Continent Petroleum Corporation

J. P. Hammond
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Booth Kellough
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Roy O. Yarbrough
Hobbs, New Mexico
For the New Mexico Oil Conservation Commission

G. L. Shoemaker
Midland, Texas
For Stanolind Oil Purchasing Company

Frank R. Lovering
Hobbs, New Mexico
For Shell Oil Company

Paxton Howard
Midland, Texas
For Shell Oil Company

E. T. Adair
Fort Worth, Texas
For Texas Pacific Coal & Oil Company

R. G. Schuehle
Midland, Texas
For Texas Pacific Coal & Oil Company

Carl Barnhart
Midland, Texas
For Amerada Petroleum Corporation

R. S. Christie
Fort Worth, Texas
For Amerada Petroleum Corporation

J. W. House
Midland, Texas
For Humble Oil Company

Herman Pressler
Houston, Texas
For Humble Oil Company

Lloyd L. Gray
Tulsa, Oklahoma
For Gulf Oil Corporation

E. J. Gallagher
Hobbs, New Mexico
For Gulf Oil Corporation

C. D. Borland
Hobbs, New Mexico
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R. E. Canfield
Roswell, New Mexico
For the U. S. Geological Survey

Foster Morrell
Roswell, New Mexico
For the U. S. Geological Survey

Paul S. Johnston
Lubbock, Texas
For the Texas Tech. College

R. S. Blymn
Hobbs, New Mexico
For the Oil Conservation Commission

E. L. Shafer
Hobbs, New Mexico
For Continental Oil Company

I. H. Hinchfeld
Hobbs, New Mexico
For Lea County Operators

Elvis A. Utz
Santa Fe, New Mexico
For the Oil Conservation Commission

E. E. Kinney
Artesia, New Mexico
For New Mexico Bureau of Mines

E. C. Anderson
Socorro, New Mexico
For New Mexico Bureau of Mines

Dan McCormick
Carlsbad, New Mexico
For the Oil Conservation Commission

MR. SHEPARD: The meeting will please come to order. Mr. Graham, will you please read the first case.

(Mr. Graham read the notice of publication in Case No. 190.)

MR. KELLOUGH: May it please the Commission, I am attorney for Amerada. I don't know whether anybody is here to represent the Twin Oil Corporation or not. This application is an application to unitize a lease covering two acres owned

by a cemetery tract in a 40-acre tract in which Amerada owns the lease on the other thirty-eight acres. The agreement has been entered into between the Twin Oil Corporation and the Cemetery Association and Amerada. We are, however, still negotiating with some of our lessors, to ask their joining in this agreement. If there is no objection, we would like to ask this matter be continued for sixty or ninety days so that we may complete the settlement. The case as between the Twin Oil Corporation and the Cemetery Association has been settled, and we would like the matter just continued over until we can finally get it wound up.

MR. SHEARD: Is there anyone representing the Twin Oil Company or the Cemetery Association here? Does anyone have any objection to this being carried over? If not, it will be carried over until the next hearing. Would you want ninety days?

MR. KELLOUGH: That would be agreeable--thirty, or sixty or ninety.

MR. SHEARD: We will allow ninety days.

MR. KELLOUGH: That will be all right. We feel certain we will have it worked out in a few weeks.

MR. SHEARD: Read the next case, please.

(Mr. Graham reads the notice of publication in Case No. 191.)

MR. KELLOUGH: If the Commission please, I would like to make a statement for the record in connection with this matter. We came here yesterday prepared to present our evidence in this case with the understanding that all the operators were in agreement to our application. However, yesterday afternoon we were advised by the Texas Pacific Coal Company that they desired a continuance of this matter.

We have some properties which will be jointly owned in the 80-acre units if they are granted, and also the Texas Pacific Coal Company is now drilling a well located in the southeast of the northeast of Section 2, Township 12 South, Range 33 East, and they have requested that this matter be continued over until they complete their well. At the present time, it will be set down as soon as possible after the completion of their well. Their request is based upon the fact that additional information will be obtained from this well which is now drilling, and further that it will give us an opportunity to work out some arrangements with respect to these jointly owned leases. On behalf of Amerada, we have agreed to such a continuance with the understanding with Mr. Adair, the attorney for the Texas Pacific Company, that they will not seek any further continuance of this matter when it is set down as soon as possible after the well is completed and also with the understanding that any wells drilled in the meantime will not be located off of the pattern which Amerada has proposed in our application. Now, Mr. Adair, is that a correct statement?

MR. ADAIR: The well drilled by our company--I think possibly some other companies are involved--but any drilled by our company will conform to the proposed pattern.

MR. KELLOUGH: And you will not seek any further continuance after the matter is set down after the completion of this well?

MR. ADAIR: That is true.

MR. KELLOUGH: There are other operators interested in the area, and I wish to state to the Commission at this time

that it is possible that we now have sufficient evidence for 80-acre units in this field, and that we are not agreeing to the continuance with any hesitancy on our part that we do not have sufficient evidence, but because of the request of the Texas Pacific Coal Company, if there are any other operators here in the area, why then, of course, personally, I think I would welcome any statement they have to make as to their attitude on the continuance in this matter.

MR. SHEPARD: How long a continuance do you want?

MR. KELLOUGH: I don't believe a definite time can be specified. Mr. Adair advises me he believes their well can be completed in approximately ninety days. Rather than set it down--it may be completed sooner. I don't know how they are getting along with the drilling. I believe they are down around seven or eight thousand feet, but we would be most anxious to advise the Commission immediately upon the completion of the well to have the matter set down as soon as possible, because we are urging it very strongly, and we don't want to be delayed any more than we possibly can.

MR. SHEPARD: Any objections? If not, it will be continued indefinitely until you ask for it. Case 192.

(Mr. Graham reads notice of publication in Case 192.)

MR. GRAY: We would like to ask for a continuance in that case also. At the present time, we have a well completed as an Ellenburger Well. There is some indication it may be making a little bit of water. We would like to observe it a longer period of time before we put on testimony since we may want to withdraw the application.

MR. SHEPARD: Can we set that down for the first of November?

MR. GRAY: Yes, I think that will be all right.

MR. SHEPARD: If there is no objection, it will be continued until the first of November hearing. Case No. 193.

(Mr. Graham reads the notice of publication in Case No. 193.)

MR. HOWARD: Paxton Howard and Frank Lovering for the Shell Oil Company. We ask that Mr. Lovering be sworn.

(Witness sworn.)

FRANK R. LOVERING, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. HOWARD:

Q. State your name, please.

A. Frank R. Lovering.

Q. You live at Hobbs, New Mexico?

A. Yes, sir.

Q. And are employed by the Shell Oil Company, Inc.?

A. That's right.

Q. In what capacity?

A. Superintendent.

Q. In your capacity as superintendent you have jurisdiction of and are familiar with the field designated as the West Wilson Field, Lea County, New Mexico?

A. I do.

Q. You are familiar with the contents of the application filed for this hearing?

A. I am.

Q. I will hand you--will you identify--and please mark this as Exhibit A--please identify this.

A. This is a plan showing--Exhibit A is a plat showing the development to date in the West Wilson pool.

Q. It was prepared under your supervision?

A. That's right.

MR. HOWARD: I ask that it be admitted, please.

MR. SHEPARD: It will be admitted.

Q. Now, Mr. Lovering, will you point out to the Commission the Shell leases that are involved in this application.

A. In this particular application the leases involved are stated in the application, State Nos. E-1830, B-7849, B-9446, E-276. For purposes of well nomenclature we have designated them as our Shell State Leases A, B, C, and D.

Q. Those leases are all owned by Shell Oil Company, Inc.?

A. That's right.

Q. They are all state leases?

A. That's right.

Q. Now, will you state to the Commission the history of the development in the West Wilson pool, please.

A. We are confronted here with a very unusual problem, as noted on this plat, the territory involved here is surrounded by four dry holes by the Vickers Petroleum up on the northwest corner of the plat, Davidson and Clower in the western portion, Cities Service well which was recently completed as a dry hole up in Section 16, and J. W. Brown with a similar well in Section 22. Further than that the J. C. Clower well No. 2 and the Shell State A-2 in the southeast quarter of Section 16 are very weak wells and determine the eastern limits of the field. So that at the present time the center of the possible development there centers around four or five leases there, and it is indicated that production will probably be limited to about one well per lease. There is no room to the north. The

eastern limits are already defined, and it looks like about a six-well field.

Q. Mr. Lovering, what was the discovery well?

A. It was the J. C. Clower No. 1.

Q. When was the discovery?

A. About a year ago.

Q. In what formation?

A. The formation is reef-type bump, drilled at a depth of about 3960 immediately below the Yates formation.

Q. And it is your belief from the present indications that each of the leases involved in this application will probably be limited to one well, is that correct?

A. That is correct. The only exception to that would be to while there may be a possible extension southward, but the indications of the well drilled on State B-1 is that the pay is pinching out, and the development southward is only problematical. The pay is only about eleven to fourteen feet in thickness which overlies a water strata, and production is rather limited. All wells were brought in under the pump rather than open flow.

Q. In the present application you ask to be relieved from the necessity of having a separate tank battery on each lease and ask permission to use a central tank battery for all State leases?

A. That's right.

Q. At the present time, what type of battery facilities do you have in contemplation?

A. At the present time, we have two high 500-barrel tanks and one separator. We are at the present time installing heating and treating facilities which will include a 750-

gun barrel and a jug-type water heater. We anticipate if our petition is accepted that we will add another 500-barrel tank to the battery on [illegible] will permit us to test any of the possible five wells that may be turned into that battery. We will be able to test them at any time at the pleasure of the Commission or any other authority.

Q. The tank battery is on Shell A as shown in the plat?

A. Directly between wells 1 and 2.

Q. And what is the estimated cost of the installation of this tank battery?

A. Between sixteen and eighteen thousand dollars. It has been generally--we like to carry at least four and a half tank production in our batteries. And it has been, and it generally runs between five and six dollars a barrel exclusive of heating, treating, and settling facilities.

Q. Now, to construct separate tank batteries on each of the leases, do you have an estimate as to what the cost would be as to each lease?

A. With heating and treating facilities it would run around $12,000.00, to state a rough estimate.

Q.. Yes, sir, that's right.

A. The engineers gave us a figure here, I believe.

Q. Well, it is stated in the application, and in your opinion that cost as regards each of these separate leases would be for the sole purpose of taking care of what at this time appears to be just one well?

Q. By asking the central tank battery, there can be saved the cost of these separate installations and in

addition to that the central tank battery can be equipped so that separate tests can be taken on all of these wells?

A. That's right.

Q. In your opinion will the granting of this application in any manner aid in conservation and prevention of the waste of natural resources?

A. It will.

Q. In what manner?

A. In reduced further maintenance cost and operational cost. It will reduce operational cost in the neighborhood of 60 per cent. It will cut down maintenance cost tremendously, just the difference between one tank battery and four or five.

Q. And that matter will prolong the economic life of the various leases?

A. It will make it possible to continue producing those wells for a longer period of time due to the reduced operating and maintenance cost.

Q. All the royalty is the same, owned by the State?

A. That is correct.

Q. Do you have anything else to add?

A. No, I would be glad to answer any questions.

MR. HOWARD: Does the Commission have any questions?

MR. McCORMICK: How about overriding royalties or oil payments?

A. None that I know of.

MR. McCORMICK: None on the other leases?

A. We were informed the royalties were all the same.

MR. HOWARD: That is our information that the royalties were all the same.

MR. GRAHAM: Does your information disclose the institutional ownership of all the four leases? Is it the same institution? Do they all belong to the schools?

MR. HOWARD: Yes, sir.

MR. McCORMICK: Do you have the leases with you, Mr. Howard?

MR. HOWARD: No, sir, I do not.

MR. McCORMICK: What system will you have for actually measuring the oil produced from each separate lease?

A. The facilities will be there to make periodic tests of at least two wells at a time, weekly, monthly, which we normally do anyway, and it would be no different than any other battery with the same facilities.

MR. McCORMICK: How do you know exactly how much oil each well produces each month during a proration period?

A. We never know exactly any more than we know on any two wells in the State of New Mexico. That is our general practice; it is based on period production. We can make those at the rule of the Commission, or at any specific interval, or at any time you wish for that matter.

MR. McCORMICK: This testing device you will have to test the production, it can be run for any period?

A. Any predetermined period, that is right.

MR. HOWARD: Whatever tests the Commission requires, we are ready to make. We do have a peculiar problem, and it looks like it will be a very small field. They are all leases with a common royalty.

MR. SHEPARD: Any objections? Does anyone have anything to say? If not, then it will be granted.

MR. HOWARD: Thank you.

MR. SHEPARD: Case 194.

(Mr. Graham reads the notice of publication in Case No. 194.)

MR. SHEARD: Mr. Staley, do you have anything to offer on this?

MR. STALEY. Under the present Commission the changing of allowable between the first of one proration period until the beginning of the next proration period on any new allowable--I mean new wells--are given an allowable. That is, during the opening and closing of any proration period; from time to time the operators have done remedial work and been able to correct for high gas-oil ratio on wells in fields having limited ratios, but it has been necessary to wait until the beginning of the next proration period before assigning an allowable to that well; that is, a new allowable based on the new gas-oil ratio tested after the remedial work is completed. Therefore, the Commission was requested to make a ruling regarding the placing of high gas-oil ratios--that is, giving a new allowable to a well that is penalized under the present system.

MR. SHEPARD: Mr. Morrell, do you have anything to say on this?

MR. MORRELL: I see no objection to it.

MR. SHEPARD: Any other objections? Anyone have anything to say? If not, it will be granted. There being no further business, we will stand adjourned.

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I HEREBY CERTIFY That the foregoing transcript of proceedings before the Oil Conservation Commission is a true record of the matters therein set forth.

DONE at Santa Fe, New Mexico, this 20th day of September, 1949.

E. E. GREESON
Notary Public

My Commission Expires 8-4-52.

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTS #1 WELL, LOCATED IN NW/4 SE/4 SECTION 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO

CASE NO. 191

FINDINGS OF FACT AND CONCLUSIONS OF LAW REQUESTED BY APPLICANT, AMERADA PETROLEUM CORPORATION

FINDINGS OF FACT

1. That on July 26, 1949, the Applicant, Amerada Petroleum Corporation, completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2-12S-33E, Lea County, New Mexico. Said well was drilled to a total depth of 11,766 feet and encountered the top of the Devonian formation at 10,734 feet. The well was plugged back and finally perforated from 10,950 feet to 10,965 feet, and is producing through said perforations. Upon testing the well flowed 400 barrels of oil in 5½ hours through a ½" choke with a gravity of 44.4 and a gas/oil ratio of 28 to 1. The top of the pay section in the Devonian formation is 10,790 feet and the base of the pay section is approximately 10,980 feet.

2. That the probable productive limits of the Devonian formation discovered in said well and from which it is producing is as follows, to wit:

E/2 of Sec. 34 and
All of Sec. 35 and
W/2 of Sec. 36, all in 11S-33E, and

E/2 of Sec. 3 and
All of Sec. 2 and
W/2 of Sec. 1 and
N/2 of Sec. 11 and
NW/4 of Sec. 12, all in 12S-33E,
Lea County, New Mexico

3. That the pool or reservoir discovered by said well and from which it is producing is a new common source of supply in the State of New Mexico and has been named and designated by the Oil Conservation Commission as the "Bagley-Siluro-Devonian Pool".

4. That in addition to the discovery well described above, there were, at the time of the hearing herein, then completed or drilling the following wells within the probable productive area of said new common source of supply described above, to wit:

(a) Amerada-State BTC No. 1 Well, located in the center of the SE/4 SW/4 of Sec. 35-11S-33E;

(b) Amerada-State BTD No. 1 Well, located in the center of the SE/4 SW/4 Sec. 2-12S-33E;

(c) Texas Pacific Coal & Oil Company No. 1 State B- Account No. 1, located in the center of the SE/4 NE/4 of Sec. 2-12S-33E;

(d) Amerada-State BTD No. 2 Well, located in the center of the NW/4 SE/4 Sec. 35-11S-33E, which well at the time of the hearing herein was drilling at a depth of approximately 7,000 feet;

(e) Amerada-Simmons No. 1 Well, located in the center of the NW/4 NW/4 Sec. 11-12S-33E, which well at the time of the hearing herein was drilling at the depth of approximately 3685 feet;

(f) Texas Pacific Coal & Oil Company No. 1 State C- located in the NW/4 NE/4 Sec. 2-12S-33E, which at the time of the hearing herein was drilling at the approximate depth of 4,000 feet;

That in addition to the wells described above, Applicant, Amerada Petroleum Corporation, drilled its Amerada No. 1 Caudle located in the center of the SE/4 NE/4 of Sec. 10-12S-33E, which tested salt water in the same stratigraphic horizon that is producing oil in the discovery well described above, and which has been completed as an oil well in a shallower formation.

That in addition to the wells described above, the Mid-Continent Petroleum Corporation drilled its No. 1 State

Land 65 Well, located in the center of the SW/4 NW/4 of Sec. 1-12S-33E, which well was not drilled to a sufficient depth to reach the Devonian formation from which the discovery well is producing, but said well was at the time of the hearing herein completed as an oil well in a shallower formation.

5. That the order entered herein should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well, as above described, is now producing, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in this common source of supply.

6. That the Bagley-Siluro-Devonian Pool, as found in the discovery well at the depths hereinabove set forth, is a common source of supply which should be drilled and developed on proration units larger than those normally established under the present rules and regulations and orders of the Commission with respect to proration units, because of the depth of such wells, the time necessary to drill said wells, and the high cost and expense required in the drilling and completion of said wells, together with the effective drainage area of each well located in said pool, and that proration units of eighty acres, or one-half of a governmental quarter section, are necessary and proper for the drilling and development of said common source of supply, such being the area which may be efficiently and economically drained and developed by one well.

7. That to protect the correlative rights of all parties hereto, and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the units should be formed by dividing each governmental quarter section

by a line from North to South through the center thereof so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 and NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 and NE/4 SE/4 Sec. 2-12S-33E
S/2 SE/4 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

8. That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to protect the correlative rights of all 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, with a tolerance of 150 feet in any direction to avoid surface obstructions.

9. That in the event the well referred to above, known as the "Mid-Continent Petroleum Corporation No. 1 State Land 65" located in the center of SW/4 NW/4 Sec. 1-12S-33E, is deepened to the Siluro-Devonian formation from which the discovery well is now producing, that said well should be granted an exception to this spacing order and should be considered the well for the proration unit on which it is located for the reason that said well was commenced prior to the completion of the discovery well.

10. That until further order of the Commission the allowables for all wells drilled to said common source of supply should be computed on the same basis as in the case of other proration units of forty acres, applying the deep pool adaptation provided for in the general rules and regulations

of the Oil Conservation Commission and any other special orders that may, from time to time, be applicable, it being understood that the Commission hereby reserves the jurisdiction and right at any future time to increase the allowable if, after notice and hearing, the evidence submitted justifies such increase.

11. That in the event good cause is shown for the granting of an exception to the well location pattern herein provided for, such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well shall be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

12. That except as above specifically set forth, all of the present rules, regulations and orders of the Commission are adequate and sufficient to properly cover the drilling, equipping, and operating of wells drilled into the new common source of supply referred to above, and therefore the general state-wide rules and regulations should remain in full force and effect, except as modified, amended or superseded in the particulars specifically set out above.

CONCLUSIONS OF LAW

That based upon the findings of fact set out above, Applicant requests the Commission to enter the following proposed

ORDER:

1. That the Amerada-State BTA No. 1 Well located in the center of NW/4 SE/4 Sec. 2-12S-33E, Lea County, New Mexico, producing from the Siluro-Devonian formation at the approximate depths hereinabove set forth, discovered a new common source of supply not heretofore discovered and produced

in this state, and that the probable productive area of said new common source of supply is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in 11S-33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in 12S-33E
Lea County, New Mexico

That said new common source of supply is designated the "Bagley-Siluro-Devonian Pool".

That the order entered in this case is intended to cover all of the common source of supply from which the Amerada-State BTA No. 1 Well, described above, is producing, and any and all wells drilled to and produced from said common source of supply, whether within or without the probable productive area delineated above, or any extension thereof, as may be determined by further development, shall be drilled on the spacing pattern hereinafter set forth.

2. That proration units of eighty acres, or an area equivalent to one-half of a governmental quarter section are hereby established for the production of oil and gas from the "Bagley-Siluro-Devonian Pool", and in order to protect the correlative rights of the parties, said units shall comprise the East Half and the West Half of each governmental quarter section within said area, except the following units, to wit:

N/2 NW/4 of Sec. 35-11S-33E
S/2 NW/4 of Sec. 35-11S-33E
N/2 NE/4 of Sec. 2-12S-33E
SW/4 NE/4 and NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 and NE/4 SE/4 Sec. 2-12S-33E
S/2 SE/4 of Sec. 2-12S-33E
N/2 NE/4 of Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

3. That all wells drilled into said common source of supply known as the "Bagley-Siluro-Devonian Pool" shall be located in the center of the Northwest and Southeast Quarters

of each governmental quarter section, with a tolerance in any direction of 150 feet to avoid surface obstructions, except the Mid-Continent Petroleum Corporation No. 1 State Land 65 Well, located in the center of the SW/4 NW/4 of Sec. 1-12S-33E, in the event said well is deepened and is productive in said common source of supply, in which event said well is hereby granted an exception to this order and shall be considered the well for the unit upon which it is located.

4. That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section, assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, shall be the proportional factor of 4.67 times the top allowable, until such time as the Commission may issue such further and additional orders, whether general state-wide orders or special orders in this case, or general rules and regulations affecting the allowable of this pool as may be deemed necessary, provided that the Commission reserves jurisdiction to increase said allowable after notice and hearing if the evidence produced thereon justifies an increase.

5. That the Commission may for good cause shown, after notice and hearing, permit the drilling of a well off of the spacing pattern herein provided, but (except for the exception herein granted to the Mid-Continent Petroleum Corporation No. 1 State Land #65 Well in the event it is deepened to the Bagley-Siluro-Devonian Pool), if any well is drilled off of the spacing pattern herein provided as the result of such an exception granted by the Commission after notice and hearing, the allowable for the proration unit on which said well is located shall be reduced, the amount to be determined by the Commission in accordance with the evidence presented at the hearing.

6. That all rules, regulations and orders heretofore issued by the Commission which may conflict herewith are superseded with respect to the Bagley-Siluro-Devonian Pool. Otherwise, said rules, regulations and orders shall be fully applicable hereto.

7. That the Commission retains jurisdiction of this case for the purpose of issuing such further and additional orders that may be necessary to carry out the terms and provisions hereof as set forth above, and to meet changed conditions, prevent inequities and to preserve the correlative rights upon the motion of the Commission or upon application of any interested party, after a public hearing and notices provided by law.

Respectfully submitted,

SETH & MONTGOMERY

By _____
J. O. Seth

_____
Oliver Seth

_____
Harry D. Page

_____
Booth Kellough

Attorneys for Applicant,
Amerada Petroleum Corporation

COPY

ATWOOD, MALONE & CAMPBELL
LAWYERS

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

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

April 14, 1950

Hon. George T. Harris
Judge of the Fifth Judicial District
Court House
Roswell, New Mexico

Re: Cause No. 8485 - Lea County

Dear Judge Harris:

This case, which is now pending in the District Court of Lea County, is an appeal from an order of the Oil Conservation Commission of New Mexico denying the application of Amerada Petroleum Corporation for 80-acre well spacing in the Bagley area of Lea County. It is the first appeal in the history of New Mexico from an order of the Oil Conservation Commission.

The appeal was taken by Amerada Petroleum Corporation and the defendants in the appeal are Texas Pacific Coal and Oil Company and the members of the Oil Conservation Commission of New Mexico. Our firm represents Texas Pacific Coal and Oil Company.

We believe that a pretrial conference will be of material assistance in connection with the further handling of the case, inasmuch as this is the first proceeding of its kind to be handled in the courts of New Mexico. In addition, it should be possible to simplify the proof and clarify the issues which will be presented in court. It is, therefore, requested that this case be set down for pretrial conference at the earliest date convenient to the court for the purpose of considering the following matters, in addition to any others that counsel for opposing parties may suggest.

1. The nature and scope of the review by this court of the order appealed from, including the question of what evidence may be presented when the appeal is heard.

2. The issues and legal questions which are presented by the petition for review and the responsive pleadings filed by the defendants.

3. The matters in issue which are admitted by both sides and as to which proof can be eliminated.

4. The matter of the transcript from the Oil Conservation Commission and its status in the appeal.

We are confident that there will be additional matters which other counsel will want to suggest for determination at the pretrial conference.

It occurs to us that it might be desirable to hold this conference in Roswell. The firm of Hervey, Dow & Hinkle is one of those representing Amerada Petroleum Corporation. In addition, Messrs. Seth and Montgomery of Santa Fe are representing Amerada. Don G. McCormick and George Graham are attorneys for the Oil Conservation Commission in the matter. In addition, company attorneys from both Tulsa and Fort Worth will be present to participate in the pretrial and the trial. It would probably be more convenient for all concerned to hold the conference in Roswell, as well as making available better accommodations for out of state attorneys who will be present.

Respectfully yours,

ATWOOD, MALONE & CAMPBELL

By: Jack M. Campbell

JMC:bk

cc: Hervey, Dow & Hinkle
Seth & Montgomery
Don G. McCormick
George A. Graham
Amerada Petroleum Corporation
Texas Pacific Coal and Oil Company

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

ATWOOD, MALONE & CAMPBELL
LAWYERS

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

May 23, 1950

Mr. George Graham,
Commissioner Public Lands
Santa Fe, New Mexico

Dear George:

As you know, the pretrial conference on the Amerada appeal is set for May 29 at 9 o'clock A.M. in the District Court of Roswell. We presume you will be here and that you will have with you the complete transcript of proceedings before the commission.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

By Jack M. Campbell

JMC:hl

cc: Mr. R. R. Spurrier,
Director of Oil Conservation Commission
Santa Fe, New Mexico

IN THE DISTRICT COURT OF LEA COUNTY

STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF)
AMERADA PETROLEUM CORPORATION FOR)
REVIEW AND APPEAL OF PROCEEDING)
BEFORE THE OIL CONSERVATION) Case No. 8485
COMMISSION OF THE STATE OF NEW)
MEXICO IN CASE NO. 191)

NOTICE OF PRETRIAL CONFERENCE

TO: Hervey, Dow & Hinkle
Roswell, New Mexico

Seth & Montgomery
Santa Fe, New Mexico

Harry D. Page
Tulsa, Oklahoma

Booth Kellough
Tulsa, Oklahoma

Attorneys for petitioner, Amerada Petroleum Corporation, and

Joe L. Martinez, Attorney General
Santa Fe, New Mexico

Phillip Dunleavy, Assistant Attorney General
Santa Fe, New Mexico

Don G. McCormick, Special Assistant Attorney General
Carlsbad, New Mexico

George L. Graham, Special Assistant Attorney General
Santa Fe, New Mexico

Attorneys for Oil Conservation Commission of New Mexico, and

Atwood, Malone & Campbell
Rosw ell, New Mexico

Eugene T. Adair
Fort Worth, Texas

Attorneys for Texas Pacific Coal & Oil Company.

Please take notice that at the request of Texas Pacific Coal & Oil Company I have appointed the hour of 9:00 o'clock a.m. on the 29th day of May, 1950, for a pretrial conference in the above entitled cause in my chambers at the Court House, Roswell, New Mexico, pursuant to the provisions of Rule 16 of the Rules of the District Courts of the State of New Mexico.

The purpose of said pretrial conference is for the consideration of the following matters:

1. The nature and scope of the review by this court of the order appealed from, including the question of what evidence may be presented when the appeal is heard.

2. The issues and legal questions which are presented by the petition for review and the responsive pleadings filed by the defendants.

3. The matters in issue which are admitted by both sides and as to which proof can be eliminated.

4. The matter of the transcript from the hearing of the Oil Conservation Commission and its status in the appeal.

5. Such other matters as may aid in the disposition of the action.

You are requested by the Court to appear at such time and place for said pretrial conference.

DONE at Roswell, New Mexico this 5th day of May, 1950.

S/ Geo. L. Harris
District Judge

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191

CASE NO. 8485

THE STATE OF NEW MEXICO
TO: THOMAS J. MABRY, Chairman,
GUY SHEPARD, Member, and
R. R. SPURRIER, Secretary,
of the Oil Conservation Commission
of the State of New Mexico;
TEXAS PACIFIC COAL AND OIL COMPANY,
a foreign corporation,

GREETINGS:

NOTICE

You are hereby commanded to appear, in your official capacity designated above, before the District Court of the Fifth Judicial District of the State of New Mexico, Division No. 2, sitting within and for the County of Lea at Lovington, New Mexico, that being the county and place in which the petition for review herein is filed, within thirty (30) days after service of this notice, then and there to answer the petition for review of the Amerada Petroleum Corporation, Petitioner in the above cause.

You are notified that unless you so appear and answer, the petitioner, Amerada Petroleum Corporation, will appeal to the court for the relief demanded in its petition for review, which is marked "Exhibit A", attached hereto and made a part hereof to the same extent as if set out in this notice.

WITNESS the Honorable G. T. Harris, District Judge of the said Fifth Judicial District Court, Division No. 2, of the State of New Mexico, and the seal of the District Court of Lea County, New Mexico, Division No. 2, this 13th day of MARCH, 1950

(SEAL)

W. M. Beauchamp

W. M. Beauchamp, Clerk of the said District Court.

By _____ Deputy

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO, IN CASE NO. 191

Case No.8485

PETITION FOR REVIEW

Comes, now Amerada Petroleum Corporation, and for its petition for the review of the action of the Oil Conservation Commission of the State of New Mexico in the proceeding referred to above, alleges and states:

1. That on July 29, 1949, Petitioner filed its application with the Oil Conservation Commission of the State of New Mexico for the establishment of eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, and for the uniform spacing of wells in said pool, which application was given Case No. 191 by the Commission.

2. Petitioner further states that due notice having been given said application came on for hearing before the Oil Conservation Commission of the State of New Mexico on December 20, 1949, at which hearing Petitioner introduced evidence in support of its application, establishing by a clear preponderance thereof the following facts which Petitioner hereby realleges, to wit:

(a) That on July 26, 1949, Petitioner completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2, Township 12 South, Range 33 East, Lea County, New Mexico, which said well discovered a new common source of supply known as the Bagley Siluro-Devonian Pool, found at the approximate depth of 10,790 feet to 10,980 feet.

"EXHIBIT A"

(b) That the probable productive limits of said Bagley Siluro-Devonian Pool is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in T11S-R33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in T12S-R33E
Lea County, New Mexico

(c) That one well in said pool will adequately, efficiently and economically drain an area of at least eighty acres and that to require the drilling of more than one well to eighty acres in said pool will result in the drilling of unnecessary wells and will require Petitioner to drill more wells than are reasonably necessary to secure its proportionate part of the production from said pool.

(d) That because of the effective drainage area of each well in said pool, the great depth thereof and the high cost and expense required in the drilling and completion of said wells, proration units of eighty acres or one-half of a governmental quarter section should be established.

(e) That to protect the correlative rights of all parties hereto and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the unit should be formed by dividing each governmental quarter section by a line from north to south through the center thereof, so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 & NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 & NE/4 SE/4 Sec. 2-12S-33E
S/2 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

(f) That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to protect the

correlative rights of all parties interested therein, all wells drilled into said common source of supply should be located in the center of the northwest and southeast quarters of each governmental quarter section with a tolerance of 150 feet in any direction to avoid surface obstructions.

(g) That the order of the Commission should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well as above described is now producing, known as the Bagley Siluro-Devonian Pool, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in the common source of supply.

(h) That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, should be the proportional factor of 4.67 times the top allowable until such time as the development of said pool, based upon evidence submitted to the Commission after notice and hearing, justifies an increase in allowable without injury to the reservoir, and that the Commission should retain jurisdiction to increase said allowable if the evidence so justifies.

(i) That in the event good cause is shown for the granting of an exception to the well location pattern proposed by Petitioner such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well should be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

3. Attached hereto marked "Exhibit A" and made a part hereof is a plat showing the location of the Bagley Siluro-Devonian Pool as delineated above, the leasehold ownership, the wells drilled in said pool, the proposed spacing pattern for wells to be drilled in said pool and the proposed location of the proration units constituting an exception to the regular proration units comprising the West Half and the East Half of each governmental quarter section.

4. That thereafter on January 23, 1950, the Oil Conservation Commission entered its Order No. R-2 in Case #191, denying the application of Petitioner, which order is attached hereto marked "Exhibit B" and made a part hereof to the same extent as if set out in full herein.

5. That thereafter on February 6, 1950, Petitioner filed its timely application for rehearing before the Oil Conservation Commission of the State of New Mexico and said application for rehearing was denied by said Commission by Order No. R-8 in Case #191 on February 8, 1950, which said order is attached hereto, marked "Exhibit C" and made a part hereof to the same extent as if set out in full herein.

6. Petitioner further alleges that the grounds of invalidity of the orders of the Commission referred to above, upon which it relies and will rely, are as follows, towit:

(a) That the Commission erred in finding the evidence 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.

(b) That the Commission erred in finding the evidence insufficient to prove that one well drilled on each eighty-acre tract would efficiently drain the recoverable oil from the pool.

(c) That the orders entered by said Commission denying said application and denying the rehearing thereof are contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof the facts and matters alleged above and

that eighty acres is the area that may be efficiently and economically drained and developed by one well and that the establishment of eighty-acre proration units and uniform spacing of wells as requested by Petitioner will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

(d) That the orders of the Commission referred to above are contrary to law.

Petitioner further alleges that all of the matters and questions herein presented were heretofore presented to the Commission by the Application for Rehearing.

WHEREFORE, Petitioner respectfully prays the Court, as authorized by Section 19b, Chapter 168 of the Laws of the State of New Mexico, 1949, to review the action of the Oil Conservation Commission herein complained of and to enter its order vacating the orders of the Commission hereinabove referred to and to enter its order in lieu thereof establishing eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application of Amerada Petroleum Corporation filed with said Commission and in accordance with the evidence presented at the hearing before said Commission in support thereof as set out above and the evidence presented upon the trial de novo upon appeal, all as authorized by the laws of the State of New Mexico.

HERVEY, DOW & HINKLE

s/ By Clarence Hinkle

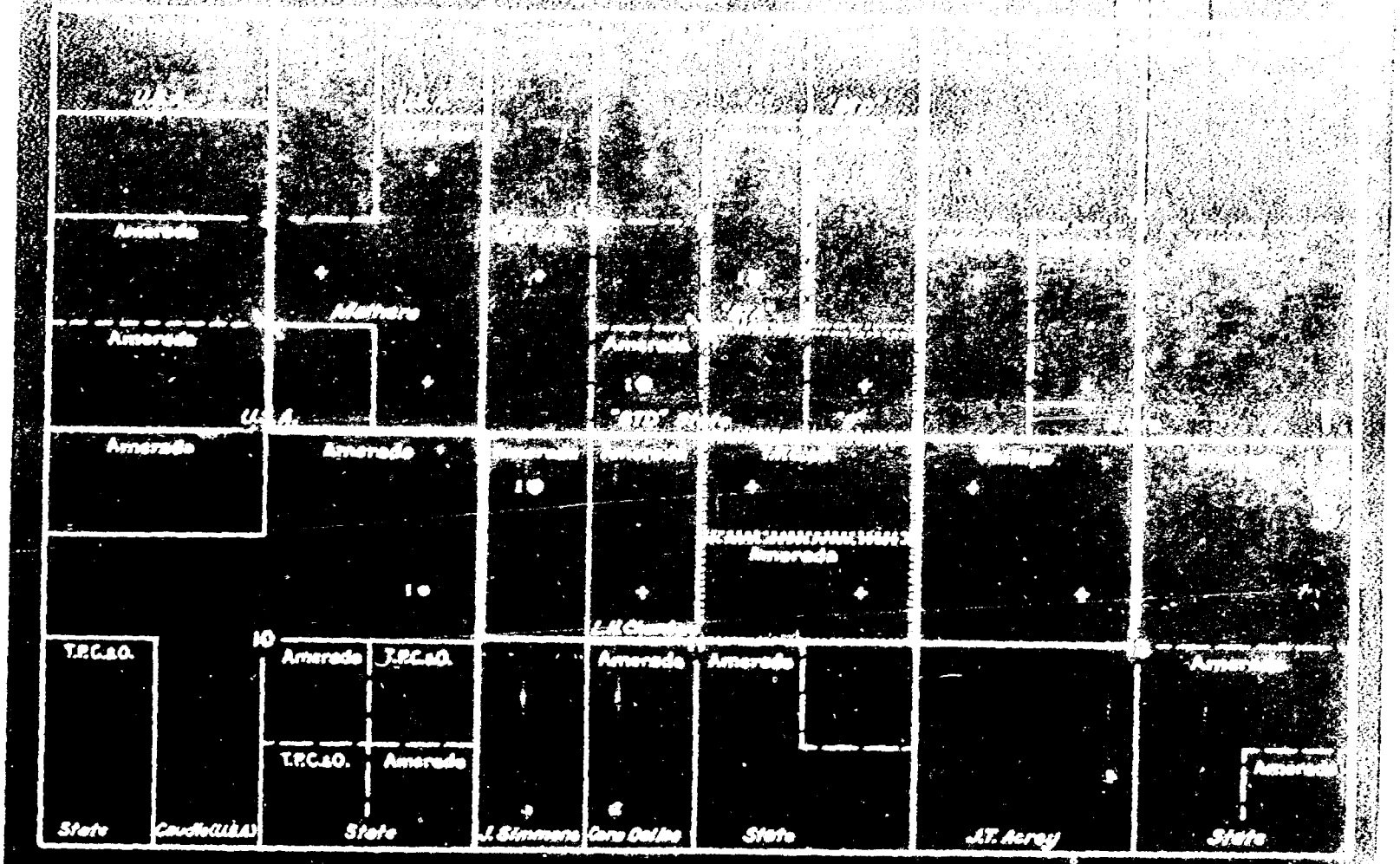
SETH & MONTGOMERY

s/ By Oliver Seth

s/ Harry D. Page

s/ Booth Kellough

Attorneys for Petitioner
Amerada Petroleum Corporation.


Amerada
Amerada
Amerada

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-9

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
Signed by:
Thomas J. Mabry, Chairman
Guy Shepard, Member
R. R. Spurrier, Secretary

"EXHIBIT B"

BERORE 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 C"

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191

CASE NO. 8485

ACCEPTANCE OF SERVICE

The undersigned hereby acknowledges receipt of a copy of Petition for Review and Notice in the above entitled cause; said service having been made on Guy Shepard, Commissioner of Public Lands of the State of New Mexico, on February 24, 1950. Thirty days are reserved for answering or otherwise pleading to said cause.

George A. Graham, Attorney for Guy Shepard, Commissioner of Public Lands of the State of New Mexico.

@? 2/2. (10)

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191.

CASE NO. 8485

THE STATE OF NEW MEXICO
TO: THOMAS J. MABRY, Chairman,
GUY SHEPARD, Member, and
R.R. SPURRIER, Secretary,
of the Oil Conservation Commission
of the State of New Mexico;
TEXAS PACIFIC COAL AND OIL COMPANY,
a foreign corporation,

GREETINGS:

NOTICE

You are hereby commanded to appear, in your official capacity designated above, before the District Court of the Fifth Judicial District of the State of New Mexico, Division No. 2, sitting within and for the County of Lea at Lovington, New Mexico, that being the county and place in which the petition for review herein is filed, within thirty (30) days after service of this notice, then and there to answer the petition for review of the Amerada Petroleum Corporation, Petitioner in the above cause.

You are notified that unless you so appear and answer, the Petitioner, Amerada Petroleum Corporation, will appeal to the court for the relief demanded in its petition for review, which is marked "Exhibit A", attached hereto and made a part hereof to the same extent as if set out in this notice.

WITNESS the Honorable G.T. Harris, District Judge of the said Fifth Judicial District Court, Division No. 2, of the State of New Mexico, and the seal of the District Court of Lea County, New Mexico, Division No. 2, this 23rd day of February, 1950.

(Seal)

W.M. Beauchamp
W.M. Beauchamp, Clerk of the said District Court.

By _____ Deputy

STATE OF NEW MEXICO)
) SS
COUNTY OF _____)

I, _____, Sheriff of _____County, New Mexico, do hereby certify that this within notice came to hand the _____ day of Februnry, 1950, and there were at the same time delivered to me for service herewith true copies of this notice and of the petition for review filed in the within cause; and that I made service herein by delivering one copy of this notice and one copy of the said petition for review herein to each of the within named persons within the said County of _____, as follows, to wit:

1. THOMAS J. MABRY, by delivering the same to

_____

_____

on February _____, 1950.

2. GUY SHEPARD, by delivering the same to

_____

_____

on February _____, 1950.

3. R. R. SPURRIER, by delivering the same to

_____

_____

on February _____, 1950.

4. Texas Pacific Coal and Oil Company, a foreign corporation, by serving

_____

its Service Agent for the State of New Mexico, by delivering the same to

_____

_____

on February _____, 1950.

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO, IN CASE NO. 191

Case No. 848

PETITION FOR REVIEW

Comes, now Amerada Petroleum Corporation, and for its petition for the review of the action of the Oil Conservation Commission of the State of New Mexico in the proceeding referred to above, alleges and states:

1. That on July 29, 1949, Petitioner filed its application with the Oil Conservation Commission of the State of New Mexico for the establishment of eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, and for the uniform spacing of wells in said pool, which application was given Case No. 191 by the Commission.

2. Petitioner further states that due notice having been given said application came on for hearing before the Oil Conservation Commission of the State of New Mexico on December 20, 1949, at which hearing Petitioner introduced evidence in support of its application, establishing by a clear preponderance thereof the following facts which Petitioner hereby realleges, to wit:

(a) That on July 26, 1949, Petitioner completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2, Township 12 South, Range 33 East, Lea County, New Mexico, which said well discovered a new common source of supply known as the Bagley Siluro-Devonian Pool, found at the approximate depth of 10,790 feet to 10,980 feet.

"EXHIBIT A"

(b) That the probable productive limits of said Bagley Siluro-Devonian Pool is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in T11S-R33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in T12S-R33E
Lea County, New Mexico

(c) That one well in said pool will adequately, efficiently and economically drain an area of at least eighty acres and that to require the drilling of more than one well to eighty acres in said pool will result in the drilling of unnecessary wells and will require Petitioner to drill more wells than are reasonably necessary to secure its proportionate part of the production from said pool.

(d) That because of the effective drainage area of each well in said pool, the great depth thereof and the high cost and expense required in the drilling and completion of said wells, proration units of eighty acres or one-half of a governmental quarter section should be established.

(e) That to protect the correlative rights of all parties hereto and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the unit should be formed by dividing each governmental quarter section by a line from north to south through the center thereof, so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 & NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 & NE/4 SE/4 Sec. 2-12S-33E
S/2 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

(f) That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to

protect the correlative rights of all parties interested therein, all wells drilled into said common source of supply should be located in the center of the northwest and southeast quarters of each governmental quarter section with a tolerance of 150 feet in any direction to avoid surface obstructions.

(g) That the order of the Commission should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well as above described is now producing, known as the Bagley Siluro-Devonian Pool, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in the common source of supply.

(h) That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, should be the proportional factor of 4.67 times the top allowable until such time as the development of said pool, based upon evidence submitted to the Commission after notice and hearing, justifies an increase in allowable without injury to the reservoir, and that the Commission should retain jurisdiction to increase said allowable if the evidence so justifies.

(i) That in the event good cause is shown for the granting of an exception to the well location pattern proposed by Petitioner such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well should be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

3. Attached hereto marked "Exhibit A" and made a part hereof is a plat showing the location of the Bagley Siluro-Devonian Pool as delineated above, the leasehold ownership, the wells drilled in said pool, the proposed spacing pattern for wells to be drilled in said pool and the proposed location of the proration units constituting an exception to the regular proration units comprising the West Half and the East Half of each governmental quarter section.

4. That thereafter on January 23, 1950, the Oil Conservation Commission entered its Order No. R-2 in Case #191, denying the application of Petitioner, which order is attached hereto marked "Exhibit B" and made a part hereof to the same extent as if set out in full herein.

5. That thereafter on February 6, 1950, Petitioner filed its timely application for rehearing before the Oil Conservation Commission of the State of New Mexico and said application for rehearing was denied by said Commission by Order No. R-8 in Case #191 on February 8, 1950, which said order is attached hereto, marked "Exhibit C" and made a part hereof to the same extent as if set out in full herein.

6. Petitioner further alleges that the grounds of invalidity of the orders of the Commission referred to above, upon which it relies and will rely, are as follows, to wit:

(a) That the Commission erred in finding the evidence 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.

(b) That the Commission erred in finding the evidence insufficient to prove that one well drilled on each eighty-acre tract would efficiently drain the recoverable oil from the pool.

(c) That the orders entered by said Commission denying said application and denying the rehearing thereof are contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof the facts and matters alleged above and that eighty acres is the area that may be efficiently and economically drained and developed by one well and that the establishment of eighty-acre proration units and uniform spacing of wells as requested by Petitioner will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

(d) That the orders of the Commission referred to above are contrary to law.

Petitioner further alleges that all of the matters and questions herein presented were heretofore presented to the Commission by the Application for Rehearing.

WHEREFORE, Petitioner respectfully prays the Court, as authorized by Section 19b, Chapter 168 of the Laws of the State of New Mexico, 1949, to review the action of the Oil Conservation Commission herein complained of and to enter its order vacating the orders of the Commission hereinabove referred to and to enter its order in lieu thereof establishing eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application of Amerada Petroleum Corporation filed with said Commission and in accordance with the evidence presented at the hearing before said Commission in support thereof as set out above and the evidence presented upon the trial de novo upon appeal, all as authorized by the laws of the State of New Mexico.

KERVEY, DOW & HINKLE

S/ By Clarence Hinkle

SETH & MONTGOMERY

S/ By Oliver Seth

S/ Harry D. Page
Harry D. Page

S/ Booth Kellough
Booth Kellough

-5-

Attorneys for Petitioner
Amerada Petroleum Corporation.

(c) That the orders entered by said Commission denying said application and denying the rehearing thereof are contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof the facts and matters alleged above and that eighty acres is the area that may be efficiently and economically drained and developed by one well and that the establishment of eighty-acre proration units and uniform spacing of wells as requested by Petitioner will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

(d) That the orders of the Commission referred to above are contrary to law.

Petitioner further alleges that all of the matters and questions herein presented were heretofore presented to the Commission by the Application for Rehearing.

WHEREFORE, Petitioner respectfully prays the Court, as authorized by Section 19b, Chapter 168 of the Laws of the State of New Mexico, 1949, to review the action of the Oil Conservation Commission herein complained of and to enter its order vacating the orders of the Commission hereinabove referred to and to enter its order in lieu thereof establishing eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application of Amerada Petroleum Corporation filed with said Commission and in accordance with the evidence presented at the hearing before said Commission in support thereof as set out above and the evidence presented upon the trial de novo upon appeal, all as authorized by the laws of the State of New Mexico.

HERVEY, DOW & HINKLE

s/ By Clarence Hinkle

SETH & MONTGOMERY

s/ By Oliver Seth

s/ Harry D Page
Harry D. Page

s/ Booth Kellough
Booth Kellough

-5-

Attorneys for Petitioner
Amerada Petroleum Corporation.

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
Signed by:
Thomas J. Mabry, Chairman
Guy Shepard, Member
R. R. Spurrier, Secretary

"EXHIBIT B"

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 C"

NEW MEXICO
OIL CONSERVATION COMMISSION

GOVERNOR THOMAS J. MABRY
CHAIRMAN
LAND COMMISSIONER GUY SHEPARD
MEMBER
STATE GEOLOGIST R. R. SPURRIER
SECRETARY AND DIRECTOR

P. O. BOX 871
SANTA FE, NEW MEXICO

September 11, 1950

Judge George T. Harris
Judge of Fifth Judicial Court
Roswell, New Mexico

Dear Judge Harris:

The matter of dismissal, with or without prejudice, in the Amerada Bagley controversy has been discussed between Commissioner Shepard and myself. We feel it is of no consequence to the Commission whether the case be dismissed with or without prejudice since spacing cannot be a matter of prejudice but is a matter of various reservoir conditions.

Respectfully,

R. R. Spurrier

RRS:bpw

Secretary and Director

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

The following proceedings before the Oil Conservation Commission, State of New Mexico, came on pursuant to legal notice of publication, and at the time and place as set out below.

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, of the following public hearing to be held December 20, 1949, beginning at 10:00 o'clock A.M., on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

STATE OF NEW MEXICO TO:

All named parties in the following cases, and notice to the public;

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼, Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico. This is a readvertisement.

Case 207

In the matter of application of Stanley L. Jones, Inc., a New Mexico Corporation, for an order approving an unorthodox location for Stanley L. Jones, Inc., State No. 13, 338 feet south of the north line and 73 feet west of the east line NE¼NE¼NE¼ of Section 23, Township 18 South, Range 27 East, N.M.P.M., in the Artesia pool, Eddy County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
R. R. SPURRIER, SECRETARY

SEAL

I N D E X

WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
John A. Veeder	7	20	44	46
R. S. Christie	15	48	60	61
G. R. Carter	64	81	89	
R. G. Schaehle	91			
REBUTTAL				
C. V. Millikan	96	100		

EXHIBITS

NUMBER		IN EVIDENCE
Applicant's Nos. 1 & 2	Page	9
" " 3 & 4		43
Tex.-Pac. Exhibit "A"		22
" " "B"		65
" " "C", "D", "E", "F", "G"		68
" " "H"		69
" " "I", "J", "K", "L"		70
" " "M"		72
" " "N"		73
" " "O"		74
" " "P"		81
" " "Q"		95

BEFORE: Hon. Guy Shepard, Chairman

Hon. R. R. Spurrier, Secretary and Member

REGISTER:

Don G. McCormick, Carlsbad, N.M., for Oil Conservation Commission.

George A. Graham, Santa Fe, N.M., for Oil Conservation Commission.

Booth Kellough, Tulsa, Okla., for Amerada Petroleum Corporation.

J. O. Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

Oliver Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

R. S. Christie, Ft. Worth, Texas, for Amerada Petroelum Corporation.

John A. Veeder, Midland, Texas, for Amerada Petrdeum Corporation.

C. V. Millikan, Tulsa, Oklahoma, for Amerada Petroleum Corporation.

Eugene T. Adair, Ft. Worth, Texas, for Texas-Pacific Coal & Oil Company.

Jack M. Campbell, Roswell, N.M., for Texas-Pacific Coal & Oil Company.

G. H. Carter, Midland, Texas, for Texas-Pacific Coal & Oil Company.

R. G. Schaehle, Midland, Texas, for Texas-Pacific Coal & Oil Company.

Foster Morrell, Roswell, N.M., for U.S.G.S.

J. H. Crocker, Tulsa, Oklahoma, for Mid-Continent Petroleum Corporation.

Glenn Staley, Hobbs, N.M., for Lea County Operators.

Roy O. Yarbrough, Hobbs, N.M., for Oil Conservation Commission.

Robert C. Anderson, Roswell, for Malco Ref. Inc.

Howard Jennings, Roswell, N.M., for Malco Ref. Inc.

Elmer A. Utz, Santa Fe, N.M., for Oil Conservation Commission.

E. E. Kinney, Artesia, N.M., for N.M. Bureau of Mines.

Hon. Thos. J. Mabry, Santa Fe, N.M., for Oil Conservation Commission.

COMM. SHEPARD: The meeting will come to order.

There has been a request made that Case 207 be continued until 10 o'clock on the morning of the 27th, and the record will show, without objection, that it has been continued to that time.

At this time we will take up Case 191. Will you read it, Mr. Graham, please?

(Reads the notice of publication in Case No. 191).

MR. KELLOUGH: My name is Booth Kellough. I am attorney for Amerada Petroleum Corporation. I believe it would be helpful to make a very brief statement of our position in this case before we come to our evidence.

This is Amerada's application for a proration of units and uniform spacing of wells in the pool which has been denominated as the Bagley Pool in Lea County. Our request is for 80-acre proration units and a uniform spacing pattern.

The probable productive limits of this pool have been delineated by our geologist and the request is for the location of the units that they comprise, the W½ and the E½ of each quarter section; that is, they run north and south, with certain -- I believe about eight exceptions, running each and west, which we are recommending, due to the ownership conditions.

We are also asking for a uniform pattern for the spacing of wells whereby the wells will be located in the northwest 40-acre tract, or the NW¼ and the SE¼ of each quarter section. In order to clarify that statement, each quarter section of 140 acres will be divided by a line running north and south, making the west units and the east units, the wells to be located in the NW¼ and the SE¼. Now, that is the pattern which we are asking for.

The discovery well was the BTA Well. It was drilled to a depth of approximately -- well, put it this way: I believe our evidence would show it producing at a depth of approximately 10,000 feet, and our evidence will further show that the well cost in the neighborhood of $312,000.00 to drill the discovery well. Our evidence will further show that the estimated cost of future wells in the area will be approximately $225,000.00.

Not only because of the deep pool and the expensive wells, but our application for 80-acre proration units is based upon the belief -- and we are satisfied that our evidence will support it -- that this is a reservoir of very good quality and it has an effective water drive, so that one well will adequately and economically drain at least an area of 80 acres. Our evidence will further show that this pool is analogous to other pools in the area which have been successfully produced on 80 acres.

There is one particular point that I wish to call the Commission's attention to, with reference to our spacing pattern. It will be our recommendation that if an order is granted as we request, that it provide that the Commission for good cause shown, may grant an exception to the spacing pattern for a well to be located off of the pattern for structure or other reasons, suitable to the Commission, in which event, the allowable for the well will be reduced, the amount of the reduction to be determined by the Commission on the evidence produced at a hearing.

In other words, it is our thought that in order to assure all of the owners a recovery of their fair share of the oil from their reservoir, that it should be developed on the 80-acre spacing -- well spacing pattern, which we recommend, with the provision that the exceptions be granted, but in the event they

are granted, the Commission should then look at the evidence and determine to what extent the allowable should be cut in order that the party making the off-pattern location will not obtain an undue advantage over his neighbor.

There are other operators in this area. In addition to Amerada, there is the Gulf and the Phillips and the Mid-Continent and the Texas and Pacific Coal & Oil Company. We are informed that the Gulf and the Mid-Continent and the Phillips are favorable to our application. It is our belief that when we lay the evidence before this Commission, that you will agree that this pool should be developed on 80-acre units with a uniform spacing pattern.

MR. CAMPBELL: May it please the Commission --

MR. SHEPARD: Give your name please.

MR. CAMPBELL: Jack M. Campbell, representing Texas and Pacific Coal and Oil Company. Before the first witness is called, and without the thought of trying to suggest to the applicant how or when to present his case, we feel that the opening statement should include, for the benefit of the Commission and other operators and royalty owners interested, a statement -- or that the first witness should definitely make a statement as to what type allowable is to be requested for the 80-acre proration unit, that is, whether it will be the present 40-acre top unit allowable, as in previous order, or whether there is to be some change.

I also feel -- perhaps I missed it in the opening statement -- that the Commission should know and the interested parties should know if the proposed locations within the quarter sections suggested, are to be in the center, or if there is to be some leeway requested when the ultimate request by

the applicant is before this Commission.

MR. KELLOUGH: On the last point first, our application -- the one we filed provides that the well location should be in the center of the particular quarter section involved, with a tolerance of 150 feet in any direction for surface obstructions, in order to avoid surface obstructions.

Now, as to Mr. Campbell's request as to the manner in which we present our case, I only have this to say: that we will present to the Commission all of our evidence, and I am sure they will have ample opportunity to examine any of our witnesses on proper subjects, and I believe that any of his doubts as to our position will probably be settled by our evidence; so with the permission of the Commission, we will proceed with the evidence in this case.

COMM. SHEPARD: Call your first witness, please.

MR. KELLOUGH: I don't believe they have been sworn.

COMM. SHEPARD: Mr. Graham, will you swear them, please.

JOHN A. VEEDER

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Kellough:

Q Will you please state your name to the Commission?

A John A. Veeder.

Q Where do you live, Mr. Veeder?

A Midland.

Q And by whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Assistant District Geologist.

Q How long have you been a geologist for Amerada?

A Thirteen years.

Q Have you previously testified before this Commission in the capacity of a geologist on geological matters?

A I have.

Q Mr. Veeder, are you familiar with the Amerada B.T.A. No. 1 Well located in the center of the NW¼SE¼, Section 2, Township 12 South, Range 33 East, Lea County, New Mexico?

A I am.

Q I hand you what has been marked as Applicant's Exhibit No. 1, and ask you to state, please, what that is?

A This is the outlined area of Bagley Area, in which we would recommend our required or designated spacing.

Q This map then shows by the red line the area asked to be covered by the spacing order in this application, is that correct?

A That's right.

Q The map also shows the location of the wells drilled on the Devonian formation, is that right?

A That is right.

Q And does it also show the wells drilled on the Pennsylvanian formation?

A That is so.

Q Now, that is indicated on the exhibit itself, is it not?

A That's right. The Pennsylvanian wells are two of them and they are marked, designated on the map by the smaller circle.

Q And the map further shows the proposed location of any wells which might be drilled on the pattern asked for in our application?

A That's right.

Q Now, those are indicated by a cross, is that correct?

A Right.

Q The map further shows the location of the units by dotted line, which do not conform to the W½ or the E½ of the quarter sections, is that right?

A That is right.

Q Do you have the Schlumberger of the B.T.A.? Thank you. Will you mark this please? (Done).

I hand you what has what has been marked, Applicant's Exhibit No. 2, and ask that you please state to the Commission what this instrument is?

COMM. SHEPARD: Exhibit No. 1 and No. 2, will be received and admitted in evidence.

(Applicant's Exhibits Nos. 1 and 2, received in evidence).

Q (By Mr. Kellough) Will you state to the Commission what that is and what it shows?

A That is Schlumberger of the Amerada No. 1, State B.T.A. Schlumberger is marked at the top from the Mississippian on down to the basic and these are Schlumberger tops.

Q Do you have Schlumbergers on any other of Amerada's wells which have been supplied in this Bagley?

A I have Schlumbergers on the Amerada No. 1, State B.T.A. and B.T.C.

Q Now I hand you what has been marked Applicant's Exhibit No. 3, and ask you to please state to the Commission what that instrument is and what it shows.

A This well is also in Schlumberger electrical log under said well, showing the top of the formation, and also the section below in the Devonian from which we are producing.

Q Do you have any other Schlumberger on any other wells drilled

by Amerada?

A I have one other Schlumberger, the Amerada State B.T.D.

Q Now, Mr. Veeder, I hand you what has been marked Applicant's Exhibit No. 4, and ask you to state to the Commission what that instrument is and what it shows.

A This is also a Schlumberger electrical log on the Amerada No. 1, State B.T.D., which is also a Devonian producer. On the log we have marked the top of the Devonian.

Q When was the discovery well, B.T.A. No. 1 completed?

A The B.T.A. was completed June 16, 1949.

Q Did that well discover, in your opinion, a new reservoir, or a new common source of supply not heretofore producing?

A It did.

Q What is the producing formation in that well?

A The producing formation in Amerada No. 1, State B.T.A., is the Devonian.

Q Will you please give to the Commission the detailed description of how that well was completed?

A The Amerada No. 1, State B.T.A. was drilled on the Devonian, which was topped at 10,734. Drill stem tests were taken in the Devonian where we had flowing oil production. The well cemented casing, that is 5½ inch casing at 11,200, and continued to drill the rest of the section above the basement. Those tops below the Devonian were called as follows: -- and these are Schlumberger tops. The top Montoya was called at 11,344; the top of the Simpson at 11,604; the top of the Ellenberger, 11,670; and the top of the basement, 11,709; a total depth of 11,766 was reached.

This well was then plugged back, casing perforated in the Devonian at 11,000 to 11,015. The drill stem test was taken

which was opened 8½ hours with a recovery of 4,000 feet of oil plus 640 feet of salt water. The perforations were squeezed with cement and the casing was re-perforated 10,950 to 965. This well was then acidized with 250 gallons of acid and was completed for i.p. of flow 400 barrels of oil and 5½ hours, that is, through 1/2 inch choke, gas-oil ratio of 28 to 1; gravity of oil 44.4.

I would like to make a correction on the completion date. That was 7-26-49.

Q You mean, July 26, 1949?

A July 26, 1949, right.

Q What in your opinion is the top of the pay section?

A The top of the pay section, we consider as 10,790 feet.

Q And what, in your opinion, is the base of the pay section?

A The base of the pay section would be at approximately 10,980, that is, 15 feet below the top of the perforations where we completed the well.

Q Mr. Veeder, the map marked --

MR. ADAIR (Interrupting): Excuse me. I wasn't followin g you; I didn't get your last statement as to the base of the pay section. Would you mind repeating that?

THE WITNESS: Well, the base of the pay section, we would consider as being 15 feet below the last perforations where we completed the well.

MR. ADAIR: In feet, what is that?

THE WITNESS: That would be 10,980.

Q (By Mr. Kellough): Mr. Veeder, Applicant's Exhibit No. 1 is a map of the area -- shows by a red line the area which is asked to be covered by this spacing application. Does that area represent the probable productive area of this producing formation?

A That is so, to the best of our knowledge at the present time.

Q This map further shows other wells drilled or now drilling in this area. Would you please, for the information of the Commission point out the other wells shown on the map and explain to the Commission the present status of those wells?

A Other wells in this area completed are the Amerada No. 1, State B.T.C., located in the SE¼SW¼, Section 35, 11 South, 33 East. This well reached a total depth of 10,980, with a Schlumberger call on the top of the Devonian as 10,662. The well was completed as follows: 7-5/8" casing at total depth, 10,980. Casing perforated 10,959 to 79 with 80 shots. Well completed with i.p. of flow at the rate of 1127 barrels of oil, 24 hours. Gas-oil ratio of 33 to 1 with a gravity of 46.2.

Another well completed by Amerada in this area is the Amerada No. 1, State B.T.D. This well is located in the SE¼SW¼, Section 2, Township 12 South, Range 33 East. This well reached a total depth of 10,995. We called the top of the Devonian at 10,870. Completion history as follows: Total depth 10,995; 5½" casing, 10,980; acid 500 gallons; i.p. flow 800 -- 929 barrels of oil in 24 hours and 1/2" choke; gas-oil ratio, 32 to 1, with a gravity of 45.5.

Q Now, any other wells which have been completed in this area?

A There is one other well completed for an oil well in the Devonian, which was completed by Texas-Pacific. This well is in the SE¼SE¼ of Section 2, Township 12 South, Range 33 East.

Q Now, will you point out to the Commission the wells which are now being drilled in this area?

A Those wells now drilling are the following: The Amerada No.2, State B.T.D., which is located in the NW¼SE¼, Section 35, 11 South,

33 East. This well is drilling in the Permian at a depth of 7,000 feet.

Amerada is also drilling No. 1, Simmons, located in the NW¼NW¼, Section 11, 12 South, 33 East. This well is also drilling in the Permian at 3685.

One further well drilling is a Texas and Pacific, No. 1, State C, which is located in the NW¼NE¼ of Section 2, 12 South, 33 East; and this well is also drilling in the Permian below 4,000 feet.

Q Now, there are two additional wells shown on the map by small dots. Will you describe those wells?

A The two wells shown as small dots are Permian wells. The one well is Mid-Continent No. 1, State 65, which is located in the SW¼NW¼ of Section 1, Township 12 South, Range 33 East.

The other well is the Amerada No. 1, Caudle. This well is located in the SE¼NE¼ of Section 10, 12 South, 33 East.

Q Then, neither of those wells is producing from the formation sought to be covered by this application, is that right?

A That is right.

Q Mr. Veeder, from the samples which you have seen from the wells just described, do you have an opinion with reference to the quality of this producing formation?

A I would say that from the samples and cores I have seen, I would say it had good porosity and apparently permeability.

Q Are you familiar with any other pools in the vicinity which are also producing from the Devonian formation?

A Similar pools, I would say, would be the Hightower Pool to the south; the Crossroads Pool; Jones Ranch Pool, and also the Knowles Pool.

Q Would you compare those pools which you have named, geolo-

gically with this Bagley Pool?

A I would say all pools are producing from the upper part of the Devonian.

Q Do the pools which you have named generally have the same type of porosity?

A All pools have what we would term as solution type porosity.

Q Mr. Veeder, does the production history of these other pools, as well as the information which you have from the wells in the Bagley Pool, substantiate your opinion that this is a reservoir of good porosity and permeability?

A That's right. Our completions to date would compare with wells in the other pools.

MR. KELLOUGH: That's all.

MR. ADAIR: Excuse me, Mr. Kellough --

COMM. SHEPARD: Give your name, please.

MR. ADAIR: Eugene T. Adair, representing the Texas-Pacific Coal and Oil Company. Mr. Kellough, do you intend to have this witness inform the Commission and other operators present, the allowable that you ask to be assigned to 80-acre units?

MR. KELLOUGH: Not by this witness, but we have another witness.

MR. ADAIR: If the Commission please, then, I request the Commission to defer my cross examination of this witness until that information is in the record.

COMM. SHEPARD: Granted.

MR. KELLOUGH: Mr. Christie, will you take the witness stand?

R. S. CHRISTIE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Keilough:

Q Will you please state your name to the Commission?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Ft. Worth, Texas.

Q And by whom are you employed?

A The Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Division Petroleum Engineer.

Q And how long have you been an engineer for Amerada?

A Since 1929.

Q Now, you have previously testified before this Commission in your capacity as an engineer, on engineering matters?

A Yes, sir.

Q Mr. Christie, you are familiar with the Amerada B.T.A. No. 1 well about which Mr. Veeder testified, are you not?

A Yes, sir.

Q Do you have any information with reference to the bottom-hole pressure of that well?

A Yes, sir.

Q Will you please give the Commission the information you have?

A The most recent bottom-hole pressure taken on the State -- Amerada State BTA No. 1 was taken in November, 49. The static bottom-hole pressure at that time was 4247 pounds. That was some four months after the well was completed. At the same time, we ran a 24-hour flow test on the well. It showed a production activity index of 4.5 barrels of oil per pound drop in the bottom-hole pressure, flowing at the rate of 50 barrels per hour.

Q Mr. Christie, is that a daily production activity index?

A That is a daily production activity index.

Q What, in your opinion, is the source of energy of this Bagley reservoir?

A Water drive.

Q What is the cost of the discovery well?

A The discovery well cost approximately $312,000.00.

Q And what, in your opinion, is the estimated cost of future wells?

A We estimate the average cost of future wells would be approximately $225,000.00.

Q Mr. Christie, do you have an opinion as to the area which may be effectively drained by one well from this reservoir?

A In my opinion, one well will adequately drain 80 acres -- at least 80 acres.

Q Then, in your opinion, a proration unit of 80 acres, or one-half of a quarter section, would represent that area which may be efficiently and economically developed by one well, is that correct?

A That is right.

Q And you recommend to this Commission that a proration unit of 80 acres be established for this pool, is that right?

A Yes, sir, I do.

Q Now, will you state to the Commission what recommendations you have with reference to the location of the various units in the area; and will you please take Exhibit No. 1, the map, and point out to the Commission in brief, the location of those units?

A In the whole area?

Q Yes, not by description, but simply tell the Commission how you recommend that the units be established in this area.

A We would recommend that the wells be drilled in the center of the Northwest 40, and the Southeast 40, of each quarter section.

Q Now, what is -- let me put it this way: Do you recommend then, that the 80-acre units comprise the East half and the West half of each quarter section?

A Yes, sir, with the -- except where it is necessary to make exceptions.

Q And the dotted line on the map shows the exceptions which you are recommending?

A That's right, yes, sir.

Q Do you have any recommendation to make with reference to the Mid-Continent well located in the SW¼NW¼ of Section 1, 11 South, Range 33 East?

A If the Mid-Continent No. 1 State well should be carried to the Devonian, we would suggest that be made an exception to the spacing pattern because the well was started prior to the completion of the discovery well in the pool.

Q Now, do you have any recommendation with reference to the future off-pattern wells which may or may not be granted by the Commission?

A Well, it would seem reasonable that if a well is located off-pattern, that the well should be penalized in the allowable, and cut to some extent determined by the conditions surrounding that particular tract, which will be brought out in evidence, I presume, at an open hearing if our request is granted.

Q It is your recommendation, then, that reduction in the allowable be not any fixed formula, based upon surface acreage for smaller units, or that it neither be based upon necessarily productive or non-productive acreage in the unit; but it is your

recommendation that in the event there is an off-pattern well drilled, that the Commission, from the evidence submitted, determine to what extent the allowable should be reduced? Is that a correct statement of your recommendation?

A That is correct. I think each well presents a separate problem of its own.

Q Now, Mr. Christie, what recommendation do you have with reference to allowables?

A Until such time as we have sufficient reservoir history and producing history of the reservoir, we would recommend the top 40-acre allowable, with the deep-pool adaptation. At this time, it would be approximately 197 barrels, I believe, for that depth.

Q Now, is it your further recommendation that regardless of the exact boundaries encompassed by this red line, that the order cover the reservoir or the common source of supply as it is developed?

A Yes, that is correct. I think the entire reservoir should be included in this spacing pattern if it develops there are tracts outside the designated area at this time.

Q Do you have any special field rules which you wish to recommend?

A No, we suggest the State-wide rules apply in this case.

Q But you do recommend a tolerance of 150 feet in any direction to avoid surface obstructions, is that correct?

A Yes, that is correct.

Q Mr. Christie, are you familiar with any other Devonian pools in this area which you may wish to compare with this pool?

A Yes, sir. I am familiar with the Hightower area and the Knowles area in New Mexico, and the Jones Ranch area in Texas, which is just across the Texas-New Mexico State line.

Q Now, those pools are being produced on 80 acres, is that correct?

A Yes, sir.

Q Will you describe in what way they are comparable, if they are comparable to this Bagley Pool?

A The Jones Ranch Pool is approximately four years old, and therefore we have a four-year-old history on that particular pool; and it also, as testified by Mr. Veeder, is a Devonian reservoir. The bottom-hole pressures reflect the Jones Ranch reservoir to be a water-drive field. The allowable is slightly higher than the allowable would be in wells of this depth in New Mexico, but there seems to be no particular damage to this reservoir producing at that rate and under that spacing pattern.

MR. McCORMICK: How deep is the Jones Ranch Pool?

THE WITNESS: The Jones Ranch Pool is between -- below 11,000 -- between eleven and twelve thousand feet.

MR. SPURRIER: What is the allowable?

THE WITNESS: The allowable is 240 barrels. Of course, we have a number of shut-down days, you know, over in Texas at the present time, so that the average allowable would probably be less than 197 barrels now, per day.

Q (By Mr. Kellough) Is it your opinion, Mr. Christie, from your experience with the Jones Ranch Pool, and also the information you have here, that the pool, this pool, should be developed on the uniform spacing pattern, with 80-acre units, which we are now recommending?

A I certainly think it would be desirable, yes, sir.

Q In your opinion, would that prevent the drilling of unnecessary wells, and prevent waste?

A Yes, sir, it would.

MR. KELLOUGH: That's all.

MR. McCORMICK: Mr. Christie, how deep was the Amerada Caudle well in Section 10?

THE WITNESS: The original total depth?

MR. McCORMICK: Yes. Did you penetrate the Devonian? That's what I wanted to find out.

THE WITNESS: I believe Mr. Veeder could answer that more intelligently than I can.

MR. VEEDER: The total depth on the Caudle well was 11,083. We topped the Devonian at 11,008. We took a drill stem test from the top of the Devonian from 11,028 to 83. That drill stem test, open 4 hours, recovery 4410 feet of sulphur water, with no shoals of water.

MR. McCORMICK: How deep was Mid-Continent No. 1 in Section 1? Did it go to the Devonian?

THE WITNESS: No, it did not go to the Devonian.

MR. VEEDER: The total Mid-Continent was 3935, sir.

COMM. SHEPARD: Anyone want to cross examine?

MR. ADAIR: May I cross examine Mr. Veeder before I cross examine Mr. Christie?

COMM. SHEPARD: Yes.

CROSS EXAMINATION OF MR. VEEDER

Q (By Mr. Adair) Mr. Veeder, the tract upon which the discovery well in this area was drilled, or Amerada B.T.A. No. 1, was a farm-out from Texas-Pacific Coal and Oil Company, is that correct?

A I understand that is correct.

Q In other words, Texas-Pacific Coal and Oil Company assigned to Amerada its lease covering that 80-acre tract, and Amerada

obligated itself to drill a well, is that your understanding?
A That is my understanding.
Q In that farm-out, were there any restrictions made as to where you would drill your well on that tract?
A I can't say. I imagine there would be, but I can't testify as to the restrictions.

MR. ADAIR: Is there someone else here with Amerada who would like to answer that question if Mr. Veeder doesn't know? Mr. Millikan, do you know?

MR. MILLIKAN: I can't answer it. If you have the evidence there, perhaps you can put it in. I think the facts will stand on their own without expert testimony.

Q (By Mr. Adair) I hand you here a letter agreement between Amerada, which has been marked Texas-Pacific's Exhibit No. "A", and ask you, or any other Amerada representative present if they desire to examine that, and tell us whether or not that constitutes the farm-out agreement between Amerada and Texas-Pacific?

MR. KELLOUGH: Well, I wish to say to the Commission that we have produced here an engineering and a geological witness. This copy of a letter, which purports to be a farm-out agreement assigned by the Texas-Pacific Coal and Oil Company, is addressed to Amerada and was accepted by Amerada on October 13, 1949. I cannot say, and I can tell the Commission, I don't know whether it is the particular farm-out agreement, involving this lease, or not; but if Mr. Adair testifies it is, we have no objection to it's being introduced in evidence to show what it is. In other words, it may or may not be. If he says it is, I assume it is.

MR. McCORMICK: Does the T.P. so state?

MR. ADAIR: That is the only one we have with Amerada.

MR. McCORMICK: It will be accepted then.

MR. ADAIR: Covering this.

MR. McCORMICK: Yes.

MR. ADAIR: Without taking the time, if the Commission please, to read it, if I may state into the record, that this is the agreement and there are no restrictions as to where the well will be drilled on the 80-acre tract, nor are there any restrictions or provisions calling for 80-acre spacing. We request that it be received in evidence.

COMM. SHEPARD: It will be received.

(Tex-Pac. Exhibit No. "A" was received in evidence).

Q (By Mr. Adair) Now, Mr. Veeder, you testified as to the top of the Devonian, as to where you picked the tops in the various wells drilled?

A That's right.

Q Which is the highest well in the field from the standpoint of the top of the Devonian formation?

A The highest well in the field is the Amerada No. 1 State B.T.C. That well is located in the SE¼SW¼, Section 35, 11 South, 33 East.

MR. SPURRIER: Mr. Veeder, excuse the interruption. In describing these wells, let's cut out the exact description because from this sheet we have here, it is obvious which well you are talking about.

THE WITNESS: All right.

Q (By Mr. Adair) Now, the next highest well on the Devonian?

MR. MORRELL: If the Commission please, we can't hear. What was the top of the Devonian formation on the Amerada No. 1 State B.T.C.?

THE WITNESS: The Schlumberger top, our call on that was minus 6410.

MR. MORRELL: And the depth was --

THE WITNESS (Interrupting) That equivalent depth would be 10,662.

Q (By Mr. Adair) And the next highest well on the Devonian formation in the field was what?

A The next highest well on the Devonian in the field, on our Schlumberger correlations would be the Texas and Pacific No. 1, State B.

Q Would you give the top again on it?

A Our calling on that well would be a minus 6479.

Q So looking at your figures here, your B.T.C. is approximately 69 feet higher on the Devonian than the Texas-Pacific No. 1, State B well?

A That's right.

Q Now, the next highest well on the Devonian field?

A The next highest well would be the discovery well, Amerada No. 1, State B.T.A.

Q And the subsea datum on that is what?

A Minus 6495.

Q And the next highest well in the field -- that only leaves one, excuse me, the B.T.D. That is the next, is that correct?

A That's right.

Q What is the subsea datum on that?

A The subsea datum on that is minus 6620.

Q Mr. Veeder, you have picked the top of the Devonian right at the bottom of the black shale zone that lies at the bottom of this formation, is that right?

A Right, and use a Schlumberger correlation.

Q In order to correct your sample logs?

A That's right, to get away from the human error, we would

rather accept the Schlumberger tops.

Q In addition to human error in picking tops of formations, you also have an error caused by the lag of the samples coming from the bottom of the holes up to the surface, don't you?

A That's right.

Q There is a tendency there, is there not, for your samples to carry over from previous formations that you have cut, or higher formations you have cut through, is that not correct?

A That would depend largely on the condition of your hole, yes.

Q I noticed one or two sample logs -- it may not have been your work or it may not have been Amerada's work, -- on your B.T.A. well, it appeared, for example, there was a shale carry-over all the way down to the bottom of the hole, that was possibly a result of the carry-over from drilling through black shale formation, and then the samples remain in the mud until you get down through the formation.

A I don't believe you can drill a well without having some degree of carry-over, as you say.

Q Regardless of the formation you went through, you would have some carry-over?

A In an un-cased hole, that is right.

Q So that due to the error you mention and the carry-over and the lag in your sample that you will have, it is extremely difficult to be accurate in picking the top of any formation, is that not correct, that that alone --

A (Interrupting) I should say by samples that would be a -- there would be a variance in the tops.

Q And by the same token, it would be difficult to pick any intermediate zones within a single formation such as the Devonian formation? In other words, the top of your pay -- it would

be difficult to pick the top of your pay within the Devonian formation by samples alone and well cuttings alone; is that correct?

A I would put a limit on that, in the difficulty to pick it as to feet, right.

Q What would you consider a reasonable error? Thirty feet, forty feet?

A No. I think on particular wells that are lagged -- samples are lagged, such as we handle our samples, I should say it should be within three to five feet.

Q Now, you picked the top of the pay section distinct from the top of the Devonian section down in the Devonian, is that right?

A That --

Q (Interrupting) In other words, there is a dense area, or an area of no porosity up on the top of the Devonian section, that doesn't produce oil, is that correct? In the well so far drilled, is that correct?

A Right.

Q Where do you pick the base of the pay section, at the water-oil contact, is that where you pick the base of the pay section?

A We would roughly say so.

Q Where have you determined the water table to be, subsea datum point?

A For the discovery well we used a minus 6775.

Q Have you cut the water in any other well drilled in the field other than the discovery well, your B.T.A.? Didn't you attain water in your Caudle well?

A Yes, we drilled into water.

Q Did you find a water table there, essentially the same depth?

A On the Caudle, we took a drill stem test 11,028. That is

roughly the same depth, yes, sir.

Q Then you assume from the information that you have available at the present time that the field is underlaid with a level water table, is that correct?

A Right.

Q Now, it has been testified here that -- and I believe you testified that you have determined in your opinion that the field is both porous and permeable, is that your statement?

A I said it was porous, right.

Q And you also testified that in your opinion it was also permeable?

A Apparently permeable.

Q And you determined -- you made that determination from well cuttings?

A And cores.

Q And what well have you cored, or on what well has core information been available to you?

A The only well we have core information on, is your well, the Texas-Pacific producer.

Q Do you have the advantage or the benefit of a core analysis in that well?

A I do not.

Q You merely base your opinion upon an examination of the core, is that correct?

A That is correct.

Q Did you examine it yourself?

A I did.

Q What methods are used by geologists to determine the perema-bility of a reservoir, Mr. Veeder?

A The geologist can only determine the apparent permeability.

Q Will you distinguish for the benefit of the Commission here and for the record, between porosity and permeability?

A Surely. Porosity is your openings in a formation. Your permeability would be considered as your connections between your openings.

Q In other words, porosity is the space that holds the oil, and permeability are the pipes that carry the oil to the well hole, does that state it in a rough way; is that more or less correct?

A Right.

Q And permeability is more or less a measure of the rate of flow, is that correct?

A Yes.

Q The flow of oil through the reservoir?

A That is right.

Q So for one well to drain 80 acres that has been requested and recommended here, you must assume a more or less uniformly high degree of permeability throughout the entire reservoir, is that correct?

A That is right.

Q And similarly, you must assume the same degree of uniformly high permeability throughout each 80 acres, or 80-acre unit in the reservoir?

A Right.

Q And if there are any dense zones or dense streaks within the reservoir, you do not have that uniformly high degree of permeability necessary for one well to drain 80 acres? When we are talking about draining 80 acres -- before you answer the question -- by that I mean, drain all recoverable oil under the 80-acre tract.

A Well, of course, if you have a dense zone, you don't have --

you will have no permeability in that particular zone, that's right.

Q So you would say then that if your reservoir contained dense areas and dense zones and dense streaks, you would not have the uniformly high degree of permeability necessary for one well to drain 80 acres, is that correct?

A You would not be able to recover oil that is not there, that is correct.

Q Wouldn't there be some oil that would be trapped behind the dense zones that wouldn't get to the well hole on the basis of one well to 80 acres?

A Not any more than wells in smaller locations, I would say -- smaller spacings.

Q In other words, your testimony is that one well will drain as much recoverable oil as two wells in an 80-acre tract?

MR. KELLOUGH: Now, just a moment, please. I do not want in any manner to thwart the cross examination, but counsel is asking questions about reservoir engineering about which this witness did not testify, and about which he is obviously not called on to answer. We have an engineer present. And if he was a reservoir engineer, why we could qualify him as such and he could make him his own witness, if he wants to; but he is not qualified in that respect.

COMM. SHEPARD: Do you have a witness here who could testify to that later?

MR. KELLOUGH: Yes, we have a witness, Mr. Christie; and we also have Mr. Millikan and we would be glad to put him on the stand.

COMM. SHEPARD: Then you can question them, Mr. Adair.

MR. ADAIR: All right, sir.

Q (By Mr. Adair) Now, I don't think the answer to this question requires any engineering information, Mr. Veeder. Assuming the same rate of flow from each well, two wells on an 80-acre tract will produce more oil in a given length of time than one well located on an 80-acre tract, will they not?

A If you have the same allowable?

Q Same rate of flow.

A Well, that is apparent.

Q That is correct, is it not?

A Yes.

Q As you say, that is apparent. So in order to take care of the royalty and lease operator and the State, who wants its taxes; the royaltor only wants to spend his money during his lifetime -- you have to increase the rate of flow from one well on 80 acres to the point that it will drain the 80-acre tract, in substantially the same length of time as two wells on the 80-acre tract?

MR. KELLOUGH: If the Commission please, I would like to request the Commission to ask Mr. Adair to limit his questions to questions of the witness. If he wishes to make a closing argument, I am sure he will have an opportunity to do so. I think it would simplify the proceeding if he be instructed to ask the question rather than to engage in argument.

COMM. SHEPARD: You may go ahead, Mr. Adair; but they have other witnesses, probably, who are better qualified to answer the question, so try to cut it down.

THE WITNESS: I would rather stay with the geology. That's my field.

MR. ADAIR: The point, if the Commission please, -- Amerada has actually closed their main case as to the hearing

and they have presented the testimony of a geologist and an engineer, and some of these matters were not covered. We think that in asking for 80-acre spacing -- fixed-pattern spacing, that these various possibilities and probabilities should be considered not only from the standpoint of the argument but from the standpoint of the witnesses, who are the only ones available who can testify with reference to it.

MR. KELLOUGH: But we contend that whether the State collects taxes and how much, and whether the individual spends his money in his lifetime, is not the interest in this particular hearing.

MR. ADAIR: Let me re-word this question then, and eliminate those factors.

Q (By Mr. Adair) In order to drain 80 acres within a reasonable time with one well, as compared to two wells on 80 acres, you would obviously have to give the one well a higher allowable, wouldn't you?

A No, it is just a longer period of time to drain the acreage.

Q I said, within the same reasonable time.

A If you're working on the same time, yes.

Q And here again, if this is an engineering question and you don't prefer to answer it, we will let Mr. Christie answer it later. And, assume that you give such a well this higher allowable in order for it to support the higher rate of flow. You must assume again the uniformly high degree of permeability through the reservoir, is that not correct?

A State your question again.

Q Assuming that we have given this one well on one 80-acre tract a higher allowable in order that it will drain a recoverable amount of oil within substantially the same time as two

wells, you have to assume the same uniformly high degree of permeability throughout the 80 acres, the 80-acre tract, and throughout the reservoir, so that it will support this increased rate of flow, don't you?

A In general, I guess that's right.

Q Now, in your examination of the well logs and Schlumberger logs in the field, did you notice any abnormalities within it, such as dense zones and streaks?

A I have not.

Q Would you say if they are found in one well, it is reasonable to expect them to be found in all of them?

A I have found, in all wells examined, in what evidence we have had, we see no separation. It is a continuous porous zone.

Q A continuous porous zone?

A Right.

Q But that is not an answer to my question. If such a dense zone were found in one well, is it reasonable to assume that it might be present in other wells drilled?

A If we have found that dense zone. We have not found it.

Q And the only way, though -- due to the lag in samples, as you testified awhile ago, and the human element in picking samples, the only way you can be sure of a dense zone is by coring?

A That's right.

Q So as to determine the dense zone. By the samples, even though your depths might be three feet off, your dense zone would still be there in your section.

A Right.

Q And you can determine it by samples. Now, you have had available to you, samples of all wells drilled so far, and that

is the way you have of making your examination, based upon the samples from all Devonian wells in the field, is that correct?

A Yes, sir.

Q And by the same token, you have examined the Schlumberger surveys of all the wells in the field?

A Yes.

Q Let's talk a minute, Mr. Veeder, about the characteristics of Devonian structures and these Devonian fields you mentioned a minute ago, of Hightower, Knowles and Crossroads Pools. Are or are not these Devonian reservoirs characterized by steep dips on one side or another?

A I would say some of them are. We don't have enough evidence on all the fields mentioned.

Q Are they not also sometimes characterized by faulting?

A Faulting has been interpreted in one particular field, I would say.

Q In the Crossroads Field Pool?

A That's right.

Q Do you agree with that interpretation?

A It can be interpreted as such.

Q In such a case where you have very steep dips or faulting, it is possible to go from productive to non-productive from one end of an 80-acre tract to the other, isn't that right?

A That's right.

Q That was the case in Crossroads, was it not?

A In which particular instance are you talking about?

Q In the Santa Fe application?

A Which well?

Q Just a minute. I think the matter I am referring to is a

matter of public record, which the Commission has heard and is probably familiar with. The well to which I refer is this well here. (Indicating). It is upside down. Will you identify it?

A That's right. That is the Santa Fe well, and that is a low well. It would -- I would not say that that definitely had to be on the down-flow side of the fault.

COMM. SHEPARD: Which well is that?

MR. ADAIR: This well, if the Commission please, was considered in the Santa Fe's application for an exception. They drilled a dry hole on fixed pattern spacing on this side and asked for an exception, to drill over here where they thought the oil was present.

Q (By Mr. Adair) Let's look at the Hightower Field, Mr. Veeder. Would you say that the Devonian structure was characterized by very steep dips?

A On the wells we have evidence of, there are steep dips, by the three wells drilled at the present time.

Q On the wells drilled at the present time. Will you tell the Commission how much lower on structure, your Amerada No. 1 roach is than on your discovery well?

A That is another field. I could give that roughly.

Q I mean, you and Mr. Christie testified as to these fields being characteristic of Devonian reservoirs. Now, is it not true that your Amerada No. 1 roach drilled under a fixed pattern, 80-acre spacing plan, granted by the Commission, was dry in the Devonian 1 location south of the discovery well?

A That well was dry. I cannot say that the location was authorized by the Commission.

Q No, I didn't mean to say that location was authorized by the

Commission. I mean, it was on fixed pattern, 80-acre spacing plan.

A Right.

Q That is correct, isn't it?

A That is right.

Q Now, had that well been drilled on the 40-acre tract, part of the 80-acre unit closest to the discovery well, 330 feet from the unit line as authorized by the present State-wide rules, that well might have produced oil, might it not?

A And also, that well might have been a dry hole.

Q You had water in the Devonian, did you not?

A I beg your pardon?

Q You had water in the Devonian.

A Under roach?

Q Yes.

A We did. I mean, if we had moved it to the north, there is the possibility it could have been a dry hole.

Q And also, there is the possibility that it could have been an oil well?

A That's right. We did not know that when we staked the location.

Q That's the point I'm making. Fixed patterns of 80-acres result in dry holes, don't they?

A In all steps, wherever you make a location, I don't care what the spacing is, you take a chance on a dry hole.

Q The 80-acre spacing in the Crossroads Pool resulted in a dry hole, didn't it? Whereas, had it been drilled in the 40 closest to the production, 330 feet from the 40-acre line as permitted by State-wide rules, it would probably have gotten an oil well, wouldn't it?

A I couldn't say whether there would have been any oil. The well has not been drilled.

Q I'm asking your opinion.

A I would say you do not have the evidence of it.

Q You have no opinion?

A You're closer to production, but still it is a gamble.

Q The closer you are, would you state, to production, the less chance of getting a dry hole?

A Under normal conditions.

Q So, we have two cases in the two reservoirs which you have mentioned, the Devonian reservoirs, the Crossroads and the Hightower, where conforming to fixed-pattern, 80-acre spacing, resulted in dry holes, and you admit the possibility at least of their having gotten oil wells had they moved closer to production, 330 feet from the lease line as permitted by State rules?

A That is correct. Well, there is the same possibility when they started the well that is a dry hole now.

Q We are talking about the results as known now.

A I understand it is a dry hole, that's correct.

Q That is correct. All right, sir. Look at the Knowles area, which you testified about. There Amerada drilled its discovery well, its Hamilton, in the center of a 40-acre tract.

A That is correct.

Q While we are trying to find a Knowles map, Mr. Veeder, I have one more question about this Hightower area. There is another well presently being drilled, is there not, on the fixed pattern, 80-acre spacing, in the Hightower area, which is Gulf No. 1 well, located diagonally to the northwest of your discovery well?

A That's right.

Q Do you have any information? Has it as yet discovered oil on the Devonian?

A I have information -- no, I haven't information that it has oil or water in the well.

Q Is it not true, it is over 500 feet low to the discovery well on the Devonian?

A I believe that is untrue.

Q How much lower is it?

A Roughly, according to memory, I would say a little over 100 feet.

Q Over 100 feet low?

A That is my memory.

Q In total depth, how much deeper is it than your discovery well in Hightower?

A I do not have that information with me on Hightower.

Q Our information -- and we will put it on by witness -- this is our information, some 575 feet lower, and still no oil.

A There are Schlumbergers on those two wells.

Q That is our information. We will have a chance to examine our geologist on it. Now, getting over to the Knowles Tract. The hearing was held on that here not long ago, and the Commission, I think, is familiar with that.

MR. McCORMICK: No, the order has not been signed.

MR. ADAIR: I didn't mean to infer it had. I meant the hearing had been held on it.

MR. McCORMICK: Yes.

Q (By Mr. Adair) Your Amerada discovery well in the Knowles Pool was drilled in the center of a 40-acre tract, is that correct?

A I believe that's right.

Q You do not know of your own knowledge?

A I can probably get it from the gentlemen around here. I'm sure someone here has it.

Q Then your second well in the Knowles Pool was drilled on the 40-acre tract immediately north of the discovery well, is that not correct?

A Is that correct, Mr. Christie? Yes, that is correct.

Q And the third well drilled in the Knowles Pool, also by Amerada, was drilled in the 40-acre tract immediately south of the discovery well, is that not correct?

A That is correct.

Q So that so far as those three wells are concerned, you have essentially 40-acre spacing? You have them on three adjoining 40-acre tracts, that is correct is it not?

A I can say, well -- that is correct with the exception that the north well was -- the location was made originally for a Permean test.

Q But the point is, the three wells have been completed in the Devonian on adjoining 40-acre tracts; all three are producing oil wells, is that not correct?

A That's right.

Q So we have the situation here of two places where you have 80-acre fixed pattern spacing which resulted in dry holes; in the Hightower, three wells drilled, one dry for sure, and one running mighty low; while, in the Bagley, where you have drilled and developed on 40 acres, you have three wells drilled, and three oil wells.

MR. KELLOUGH: Are we just asking for understanding, or asking a question.

MR. ADAIR: That is correct.

A You have four wells at Bagley, I believe.

Q (By Mr. Adair) Of the three I asked you about all three --

A (Interrupting) Bagley, that is the area you are talking about?

Q I'm talking about Knowles.

A Yes, three at Knowles.

Q Yes. Was my statement correct?

A Essentially so.

Q In what respect was it wrong, Mr. Veeder?

A I misunderstood you about the number of wells in Bagley.

Q In Knowles you mean?

A In Bagley -- you said Bagley.

Q If I said Bagley, correct it to three wells in Knowles, I'm sorry. Now, Mr. Veeder, did you say definitely that the conditions which resulted in dry holes in Crossroads and Hightower did not exist within the limits of the Bagley Devonian reservoir?

A We don't have enough information at the present time to say either yes or no.

Q And by the same token, you do not have enough information then at the present time to say that 80-acre fixed-pattern spacing should be placed into effect?

A Yes, I think we do. You have to have a spacing.

Q Are you familiar with the Shafter Lake Devonian Field just across the line in Andrews County?

A Yes, to what extent?

Q Where it is located geographically?

A I am.

Q Do you know whether or not it developed on 40 or 80-acre spacing pattern?

A Yes, I think it has been developed on 40.

Q Are you familiar with the Fullerton Devonian Field, located across the State line in Andrews County, its geographical location?

A Is that the Fullerton Pool or Field?

Q The Fullerton Pool.

A Right.

Q And do you know whether it developed on 40 or 80-acre spacing?

A The pattern would be considered as 40.

Q Now, one last question, Mr. Veeder, on this particular subject. In what way do the rules that you propose here, fixed pattern, 80-acre spacing, in what way would they prevent waste?

A In this way: we figure we have good porosity and good permeability. If we drill one well in an 80-acre tract, it would cover the same amount of oil -- I'm not going to make that a time limit -- as if we drilled two wells in that same 80 acres. That certainly would be a saving.

Q To whom?

A Well, I think it would be a saving to everybody in the end. That is just waste, waste of materials and whatever you want.

Q Who pays for the second well?

A Well, the operator, if you are talking about the operator's lease.

Q In this area, you also have a Pennsylvanian formation that is productive, do you not, in the Bagley area?

A That's right.

Q Is it co-extensive with the Devonian, that is, does the Pennsylvanian produce everywhere where the Devonian does, and vice versa?

A To date, all wells have had either gas or distillate showings

on drill stem tests.

Q In the Pennsylvanian?

A In the Pennsylvanian.

Q And to date one well has been dry in the Devonian?

A That's right.

Q Indicating at least that they are not productive, each zone is not productive throughout?

A Each well would not produce out of both zones, is that what you mean?

Q And by the same token, each 40-acre tract might not produce in each zone, is that not a probability?

A That is possible.

Q So that in forming an 80-acre unit out of two separately owned 40-acre units, you would have the difficulty of adjusting correlative tracts, based upon one 40 acres possibly being productive in both zones, and the second 40 being productive in the Pennsylvanian only?

MR. KELLOUGH: May I interrupt a minute? This application which we filed asked for spacing in the Devonian. Now, if he intends to ask that the Pennsylvanian formation be included, that, I understand, is a separate reservoir. I don't believe it is proper proceeding. He is asking this witness now if he is going to encounter difficulties in trying to pool the Denovian oil with the Pennsylvanian oil. I don't know that it has anything to do with this. It is already determined as two different pools.

COMM. SHEPARD: We will confine ourselves to the application, Mr. Adair.

MR. ADAIR: If the Commission please, I believe I am doing that. Their application here and certainly their exhibit

would indicate that the Amerada had declared themselves partners in with us in the well presently drilling in No. State B.C. 1 or C. 1, it is, and would indicate in order to form that unit, some pooling or unitization or something would be necessary. Also, it would indicate that down in the S½SE¼ of 2, that additional pooling was necessary. Their state ownership map here -- I mean, ownership map here, indicates separately owned 40-acre tracts, either by fee ownership or by lease ownership; and that in order to form their 80-acre units, it would be necessary to pool.

MR. McCORMICK: Possibly to pool as to the Devonian, not as to the Pennsylvanian, isn't it, Mr. Adair?

MR. ADAIR: I don't know, sir. I have been advised by New Mexico counsel that there is considerable doubt as to whether the state can prove by zone, and I'm not attempting to answer that question.

MR. McCORMICK: Well, if you farm out a lower zone, you could also pool a lower zone, couldn't you?

MR. ADAIR: I don't know. Now on unitization, you had better ask a New Mexico lawyer about that. I prefer not to try to answer. It sounds logical that you could do so. But under unitization, talking about state unitization, I understand that the lease itself has to be unitized. There is no provision in the statute for unitization of zones.

MR. McCORMICK: Isn't that usually accomplished by the operating agreement?

MR. ADAIR: Yes, sir, generally entered into prior to the time the well is started. I merely wish to indicate that in any pooling or unitization, the question is going to be complicated due to the fact that you have two productive zones in the area

rather than one.

Q (By Mr. Adair) Mr. Vander, would you kindly point out on the map that has been placed in evidence here, the various 40-acre tracts on which Amerada has a lease, on which there are either over-riding royalties outstanding, or oil or production payments outstanding, particularly with reference to the state leases?

A I do not have that information.

Q Would it be possible for you to get the information during the noon hour from someone representing Amerada?

MR. KELLOUGH: If the Commission please, in the interest of saving time, I will stipulate into the record what our files show with reference to the location of over-riding royalty interests.

Our files reflect there is an over-ride, and I am unable to state the amount or to whom --

COMM. SHEPARD: Doesn't matter.

MR. KELLOUGH: But our files reflect an over-ride which covers the W½NE¼ of Section 3. There is another over-ride which covers the NE¼NE¼ of Section 3. In other words, the NE¼NE¼, that is a 40-acre tract.

MR. MCCORMICK: Straight over-ride?

MR. KELLOUGH: Straight over-ride. Then the third over-ride covers the SE¼NE¼ of Section 3. The third over-ride covers the W½, and two more, covering the other two 40s. Now, coming down to the SE¼ of Section 3, there is an over-ride which covers the E½SE¼, and there is another one covering the NW¼SE¼, so there is a 40, and another 80 down there. Now, move over to the NW¼ of Section 2. There is one over-ride which covers the W½NW¼, Section 2. That same over-ride also covers the NE¼SW¼,

and the SW¼SE¼ of Section 2. In other words, it covers the 80 acres in the W½NW¼, and the two diagonal 40s.

Then there is a further over-ride which covers this tract. It is two 40s. It covers the SW¼NE¼ and the NW¼SE¼ of Section 2. That is an 80-acre tract. That is the unit in which the discovery well is located, and which I understand is a farm-out from T.P., and I believe the over-ride is to them. I can't say for a certainty, but my information is that is all the over-rides in that area.

MR. McCORMICK: What about payments?

MR. KELLOUGH: I'm speaking of oil payments and over-rides as one group. As a matter of fact, I think they are all oil payments. Perhaps a certain percentage is not oil, and a certain percentage is uncovered.

MR. McCORMICK: Well, the T.P. is.

MR. KELLOUGH: Well, that may be.

MR. ADAIR: Is that an over-ride there? (Indicating).

MR. KELLOUGH: I can't say.

MR. McCORMICK: May we have it identified for our people?

MR. KELLOUGH: He is referring to the NE¼NE¼ of Section 2, a 40-acre tract, and I cannot say for a fact. Mr. Adair is informed, and I'm going to accept that for your purpose in this hearing.

COMM. SHEPARD: We will stand in recess until 1:30.

MR. KELLOUGH: For the purpose of the record, I wish to offer in evidence all exhibits marked.

COMM. SHEPARD: They will be received in evidence.

(Applicant's Exhibits Nos. 3 & 4, received in evidence).

(Whereupon, at 11:50 o'clock, A.M., the hearing was recessed).

AFTERNOON SESSION

(The hearing re-convened at 1:30 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order, and you may proceed, Mr. Adair.

MR. ADAIR: Mr. Shepard, if the Commission please, we have no further questions of Mr. Veeder at this time. Thank you very much, Mr. Veeder.

MR. KELLOUGH: Before Mr. Adair continues his cross examination of Mr. Christie, I would like to ask Mr. Veeder a couple of questions on redirect.

COMM. SHEPARD: Go ahead.

REDIRECT EXAMINATION OF MR. VEEDER

Q (By Mr. Kellough) Mr. Veeder, I would like to clear up one point that might have been misinterpreted. You testified I believe, that this reservoir had continuous permeability, did you not?

A Yes, continuous porosity.

Q Continuous porosity.

MR. ADAIR: I didn't hear that. I'm sorry.

MR. KELLOUGH: I asked if he didn't testify that this reservoir had continuous porosity.

MR. ADAIR: And permeability, didn't you ask that, too?

A And I referred to it as apparently permeable, I believe.

Q (By Mr. Kellough) Now, did you intend to convey the impression to the Commission that it had uniform porosity?

A I did not. I meant the word as continuous, as I said.

Q It is not your testimony, then, that each and every part of the reservoir is equally porous?

A That's right.

Q But that there are some sections of the reservoir which are

more porous than others?

A Right.

Q There is a variance, in other words?

A There is a variance in the porosity.

Q Now, is that a typical characteristic of Devonian pools?

A Very much so, I would say.

Q One other point. On cross examination, you were asked with reference to the Hightower Pool.

A That is right.

Q I believe Mr. Adair assumed a set of facts whereby had you drilled a well on the 40-acre tract immediately south of the B.T.B. producing well, that you would have obtained a producing well?

A He gave that assumption.

Q He assumed that set of facts. From your information that you have of that reservoir, is that a correct assumption of fact?

A I beg your pardon?

Q Is that a correct assumption?

A I do not think it is.

Q Now, assuming that it is -- assuming the assumption, the set of facts assumed by Mr. Adair, that instead of dropping down to the 40-acre tract once removed from the B.T.B. well, that you had drilled another well immediately south of the B.T.B. well on the 40-acre tract immediately south -- assuming that you had done that; and further assuming as Mr. Adair did that you discovered an oil well, would you then have been required to drill an additional well at the location where the roach well was drilled?

MR. ADAIR: Just a minute, Mr. Veeder. I believe that

calls for a conclusion of law, as to what you believe, what you mean by required. I have no objection to you leading the witness any at all.

Q (By Mr. Kellough) Would you have recommended to your company that a well be drilled?

A That is right.

MR. ADAIR: What is right?

THE WITNESS: That I would recommend -- if you had a 40-acre off-set discovery well, B.T.B., and assume it made a good well, I normally would recommend a south off-set to it, which would be the well in question.

Q (By Mr. Kellough) The roach well?

A Yes.

Q The fact is, that was a dry hole?

A That's right.

Q Now, the result would be what?

A We would have two oil wells, and one dry hole.

Q And under the testimony given here, you would have two wells where one would recover the oil under that area?

A That's right.

MR. KELLOUGH: That's all the redirect I have.

MR. ADAIR: That brings forth one more question.

RECROSS EXAMINATION

Q (By Mr. Adair) If the royalty or over-ride royalty ownership happened to be different between the two wells that you drilled that resulted in dry holes, I mean, between those two tracts, the two adjoining 40-acre tracts, then the royalty owner under the South 40 would have never had a well drilled on his land, would he?

A I wouldn't know why not.

Q Put it this way: in view of the fact you have drilled a dry hole now on the fixted pattern location, you would not at this time recommend moving up on the 40 just to the north of the well?

A It wouldn't be logical.

Q And you base that opinion, in part at least, upon the dry hole, is that right?

A That is right.

MR. McCORMICK: Mr. Veeder, have you attempted to estimate the amount of oil in place in this Bagley area?

THE WITNESS: I have not.

MR. McCORMICK: Well, have you attempted to estimate the oil under place, under each 80?

THE WITNESS: The amount of oil in the field?

MR. McCORMICK: Under each 80?

THE WITNESS: No, I have not. My method has been by comparison, not as to the specific amount of oil, that is, to the barrel, that's what you inferred?

MR. McCORMICK: Yes.

COMM. SHEPARD: Any further questions?

MR. KELLOUGH: I have no further questions of this witness.

MR. ADAIR: No.

COMM. SHEPARD: Does the T.P. wish to offer any witnesses?

MR. ADAIR: If the Commissioner please, not until Mr. Christie is cross examined.

COMM. SHEPARD: Proceed.

MR. MORRELL; Foster Morrell, U.S. Geological Survey. I have one question from Mr. Veeder.

COMM. SHEPARD: All right.

MR. MORRELL: Mr. Christie, on the exceptions as to the spacings of the units that are cited on the map which you have, could you enumerate or specify those exceptions, specify the exceptions?

MR. CHRISTIE: You are asking Mr. Veeder that question?

MR. MORRELL: Mr. Christie testified on that.

MR. CHRISTIE: Those 80-acre tracts as outlined by the dotted line would be the exceptions.

MR. MORRELL: Well, I don't have the dotted lines.

MR. CHRISTIE: Well, they are in evidence with the Commission. (Document handed to Mr. Morrell).

MR. MORRELL: That answers my question.

MR. McCORMICK: Do you want to proceed with the examination?

MR. ADAIR: Yes, I would like to do so now.

CROSS EXAMINATION OF MR. CHRISTIE

Q (By Mr. Adair) Mr. Christie, I believe you testified that P.I. tests that you took indicated to you good permeability throughout the reservoir, is that correct?

A Yes, sir.

Q Now, in what well or wells were these P.I. tests taken?

A We have taken productivity tests on our B.T.A. No. -- State B.T.A. No. 1, State B.T.C. No. 1, and State B.T.D. No. 1.

Q For the purposes of illustration, will you get before you the data on the B.T.A. No. 1?

A Yes.

Q First, to save time, will you tell us how much of the pay section is open in that well?

A The pay section in the B.T.A. No. 1 is open between 10,950 and 10,965, or 15 feet.

Q And how much pay section did you have in that B.T.A. well in the Devonian?

A Maybe Mr. Veeder can give you that better than I can.

MR. VEEDER: The top of the pay would be regarded as 10,790, -- 190 feet.

MR. ADAIR: One hundred ninety?

MR. VEEDER: Yes, sir.

Q (By Mr. Adair) So actually, you are basing your conclusion on -- from 15 feet that is perforated out of 190 feet of what you consider the pay section?

A Yes, sir.

Q Now, actually a P.I. text would indicate permeability somewhere up or down the well bore in the pay section. It doesn't necessarily indicate uniform permeability or continuous permeability up and down the well bore, does it?

A It doesn't necessarily indicate that but we are --

Q (Interrupting) You are making that assumption?

A We are reasonably sure we have continuous permeability, if it is a water-drive field which we have testified to.

Q Actually, the drive which you get from your P.I. Test in the B.T.A. could be coming from the bottom, we will say, of the pay section, could it not, so far as you know?

A Well, it would be limited to the 15 feet, I believe.

Q That you have exposed to your well bore?

A Yes, sir, and if there is continuous permeability, it is possible that the area above and below that 15 feet, might be contributing to the production through the perforations.

Q Yes, sir. I notice you said, "if". It is possible, then, that there could be dense zones within the pay section, both above and below your perforations, that is possible, and wouldn't

be indicated one way or the other from your P.I. tests?

A No, I don't believe it would.

Q I believe Mr. Yeider said there was a dense zone at the top of the Devonian of various degrees of thickness, before you actually got into the pay section?

A That's right.

Q So, assuming a similar dense zone down in the pay section -- to put it this way: the P.I. test does not rule out those dense zones at all?

A No, sir.

Q All right. Now, Mr. Christie, what types of reservoir drives do you have? What primary types of reservoir drives do you have?

A Well, there --

Q (Interrupting) I notice you speak of water drive as one.

A Well, ordinarily speaking, there are three types of different reservoir drives -- water drive, gas drive, or gas cap.

Q Now, do we have a gas cap here ?

A No, we do not.

Q So that type of drive is not furnishing any energy in this particular reservoir, is it?

A Not to our knowledge, no, sir.

Q Now, how about your gas drive? Do we have an effective gas drive within this reservoir?

A No, I believe it is not contributing very much to the productivity.

Q In other words, if you had a gas drive alone, why, one well would not drain 80 acres, would it?

A Yes, it could easily.

Q I'm not talking geologically at this time now. I am talking about during your lifetime, or within twenty, thirty, forty years.

A Yes, if you had sufficient permeability, I think it would.

Q Now, I'm not talking about a gas drive as such. I am talking about the gas drive you have present in this reservoir. What was the highest gas-oil ratio you got on the Devonian?

A The highest was 33 cubic feet per barrel on Amerada State B.T.C. No. 1.

Q You could certainly say that the gas drive could not be very effective at all; would you not say that, from such a low ratio?

A Yes, I think that is reasonable to assume.

Q And they do not happen to have a bottom-hole flood analysis?

A No, we have not run a flood analysis -- a bottom-hole flood analysis.

Q So we have ruled, out of the three drives you have mentioned -- we have ruled out the expanding gas cap and the gas drive, as effective factors in drainage of this reservoir?

A Yes, thatis, initially, at least.

Q At the present time?

A I think that is correct.

Q So you hope that you have an effective water drive?

A Yes.

Q Or at least, a partially effective water drive?

A We hope we have an effective water drive.

Q I believe Mr. Veeder testified that you were of the opinion there was a level water table under the reservoir?

A That seems to be the indication at the presenttime, yes, sir.

Q Now, Mr. Christie, let's speak for a moment, if you will, in simple terms, so I can understand it, about the characteristics of a water-drive reservoir. You have, do you not, what would be, let's say, in the form of an inverted saucer or bowl, or something that serves as a trap for the oil coming up under-

neath it -- that type of structure?

A That's about as simply stated as you could state it, yes, sir.

Q To keep it simple, as I say, so I can understand it. And underneath that, you have a level water table?

A Presumably, yes, sir.

Q Now, the thrust or drive comes from the -- the water drive comes from the water pushing up the oil, is that what happens?

A It could be, or it could be horizontally from some entrance from the side, depending on whether your acquafer -- depending on the content.

Q Well, it could be deflected by dense zones, could it not?

A I don't understand the question.

Q All right. I'll start over again. The water coming up underneath the oil, is shoving it up into this structure that has trapped the oil above it.

A Yes.

Q As your oil is removed, the water table will presumably rise, and your water table will rise right up as the oil is removed, is that what you said?

A That's right.

Q So that the wells that are located on the flank of the structure will be washed out first, will they not?

A Yes, sir.

Q And the last well to produce oil on that structure would be the well that might be situated right at the apex or top of the structure?

A That is assuming that you have the same allowable and produce the same amount out of the wells.

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A That's about as simply stated as you could state it, yes, sir.

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A Yes, sir.

Q And the last well to produce oil on that structure would be the well that might be situated right at the apex or top of the structure?

A That is assuming that you have the same allowable and produce the same amount out of the wells.

Q So the fellow who has a lease down on the flat of a structure had better get his oil as it goes by; otherwise, he will never get it, is that correct?

A Yes.

Q In other words, your drainage is up-structure. Is that what you would say?

A Yes, sir. He is in a very unfavorable position if he is on the edge of a structure.

Q Now, what do you mean by saying he is in an unfavorable position, other than just the location?

A Well, just as you stated -- he will be -- his tract will be washed out before the well in the higher up structure will be washed out.

Q Now, with a water drive, such as you assume to be present here, what effect does unequal permeability have on that drive?

A I beg your pardon?

Q Now, originally here, we had testified, or we had assumed a uniform permeability throughout the reservoir.

MR. VEEDER: I beg your pardon.

Q (By Mr. Adair) Now that has been corrected, and you assume continuous permeability throughout the reservoir, is that correct?

A Yes.

Q And there may be zones of low permeability, or zones of high permeability.

A Yes, sir.

Q In a water drive reservoir, what effect, if any, do those various zones of unequal permeability have?

A Well, it would depend on your rate of production from individual wells. Ordinarily, we would expect the oil to travel

through the more permeable sections easier.

Q And first?

A Easier and first.

Q Followed by water?

A Yes, sir.

Q So you would have what is known as fingering or tonguing of of water going into the reservoir?

A Well, you might have if you produced at such a rate where you have a differential in pressure. If you maintain the pressure uniformly, I think it would flush out the less permeable streaks as well as the more permeable streaks.

Q And if you have those uneven areas of permeability or unequal areas of permeability down flank with the flank of the structure, that further aggravates the down-flank lease operator's position, doesn't it?

A If you assume those conditions, I think it would, probably, yes.

Q Well, you are not willing to say that there is uniform permeability, and you think that probably there are varying degrees of permeability throughout the reservoir, is that not correct?

A Yes, that is characteristic of limestone and dolomites.

Q Now, with a water drive, Mr. Christie, let's assume for the moment that we have dense zones running through the reservoir, such as we find at the top of the reservoir. Now, what would be the effect there in a water-drive reservoir?

A Well, I don't know just what kind of an answer you want there.

Q Well, let's tie it down to our immediate problem here. Let's assume 80-acre spacing, with one well to 80 acres. And let's

assume that between the 40 that the well is located on and the 40 that goes with that well tract in order to make up your 80-acre unit, let's assume that there happens to be a dense zone or area. Now, how will the oil from the off-side of this dense zone or area, be produced through the well in a water-drive reservoir?

A Well, it may not be produced in that one particular well. It will be produced in some other well of the field.

Q And probably some other lease or fee owner, too?

A Yes, just like you would get under any spacing.

Q Well, in the situation we have assumed, the dense zone lying somewhere in the middle part of the 80-acre tract, 40-acre spacing would get at least part of the oil, wouldn't it, that moved off and was drained through some other oil well?

A Not necessarily. If the well happened to drain half that area, it might get but very little.

Q It would get some, but it wouldn't get all, if you just relied upon one well to 80 acres?

A It would probably get its -- depending on the reservoir conditions, it would probably get its share of the reservoir oil.

Q Now, Mr. Christie, you do not contend, do you, that when you say one well will drain 80 acres, you don't contend that the drainage area will follow your lease lines, or your 80-acre tract lines, do you?

A No, sir.

Q What is the shape of the drainage area?

A Well, generally, it is a radial.

Q Circular in shape?

A Circular, yes, sir.

Q So it would be a circle that would contain at least 80 sur-

face acres under the --

A (Interrupting) Generally speaking.

Q On the assumption and the rules you are asking for here, is that right?

A Correct.

Q At least 80 acres?

A Yes.

Q Now, of course, locating your well in the center of a 40 and drawing a circle around it, that would contain 80 acres, why, you are going to take in some of your neighbor's land around, aren't you?

A Yes, sir.

Q You are going to drain some of your neighbor's oil?

A Just like any other well will drain some of your neighbor's oil, yes, sir. That is the primary reason for a -- for uniform spacing, is to allow everyone to get his share of the oil.

Q In other words, we will assume then, a series of over-lapping circles, of circulating over-lapping circles of drainage throughout the field?

A Yes.

Q If you get some of your neighbor's oil, and your neighbor gets some of yours, it all balances out, is that your assumption?

A Yes, sir.

MR. ADAIR: If the Commission please, we have here an ownership map of this particular area. It may or may not cover more land than the map we had here this morning. I've lost mine during the noon hour. But it has the wells located thereon and we tender it here to Mr. Christy, since it has not

been marked --

COMM. SHEPARD: (Interrupting) All right.

Q (By Mr. Adair) Mr. Christy, what is the last well Amerada completed in that reservoir?

A State B.T.D. No. 1.

Q Will you take a pencil, please, and draw around that well the area you think will be drained by this particular well?

A Roughly will be satisfactory?

Q Yes, sir, unless you --

A That's too large, isn't it?

Q Make any changes you wish.

A No, that is it, roughly.

Q That is roughly the area you think will be drained?

A We will assume, roughly, an 80-acre circle.

Q Well, this morning you said at least 80 acres and it might be -- might drain more?

A Yes.

Q Are you going to confine yourself at this time now to 80 acres?

A If all the wells in the field are spaced on 80 acres, it will be confined more or less to 80 acres.

Q Now, this morning -- do you mind if we put this up on the board? (Done). This morning, Mr. Veeder testified that the highest well in the field, I believe, was this well located here. (Indicating). Can you see, Mr. Veeder?

MR. VEEDER: Yes.

Q (By Mr. Adair) And that the next highest well in the field was, I believe, the T.P. well located here, Texas-Pacific well B. 1. That the next highest well in the field was Amerada's B.T.A. well, and that the lowest well in the field was Amerada's

B.T.D. well. So we see, do we not, that coming down this line here from Texas-Pacific B.1 well, to Amerada's B.T.D. well, we are going down-structure, is that correct?

A Yes, sir.

Q And I believe you testified that the drainage of oil was up-structure in a water-drive reservoir such as you assume this to be.

A I didn't say drainage. The migration is up-structure.

Q Would you say that of the final drainage area of this down-structure unit, that more of the oil will come from down-structure than will come from up-structure?

A Depends in which direction your water-drive is coming from.

Q We here have assumed, have we not, a level water table?

A That is correct. Also assume that we have an aquafer out from the field somewhere supplying the water and that will be the direction of your water drive.

Q You have no information on that?

A No, we do not have, at least, I do not know which direction the water drive is from.

Q It could be coming from this direction (indicating) as well as from any other point on the compass, couldn't it?

A Well, as far as my knowledge is concerned, it could, yes, sir.

Q This direction -- I'm moving in towards the northeast. So in such a case, if your water drive is coming from this direction, and you cannot say it is not, -- most of the oil produced by the B.T.D. well is going to come from down-structure, isn't that sound engineering?

A Assuming that the water drive is from that direction, yes, sir.

Q So in that case, if you were called upon to define the drainage area of this B.T.D. well, you would move your circle south, that is, in a southwest direction, or drop it south. You drop it down-structure?

A Well, I am not concerned with what area this particular well would drain; I am concerned more with how much oil that well will get from the reservoir as a whole.

Q Unfortunately, Mr. Christy, you have to adjust the relative rights as I understand it, under the New Mexico law, based upon giving the land owner a fair share, to produce the recoverable oil under his land, is that correct?

A Well, that is a legal question apparently.

MR. KELLOUGH: Just a minute, please. He is arguing the law with the witness now, and he has got to know just exactly what it is. I don't think it is fair to this witness to argue the law with him, New Mexico law, on the point. That may be a matter which we can discuss at the time.

COMM. SHEPARD: You shouldn't ask any more legal questions of the witness, Mr. Adair. Confine yourself to engineering questions.

Q (By Mr. Adair) So actually, assuming the facts as we have heretofore stated them, your area of drainage drawn around this B.T.D. well, would show more oil coming from down-structure up to the well than would come from up-structure down to the well?

A Theoretically, yes, sir, if your water drive is from that direction.

Q In such case, then, Mr. Christie, the owner of these two leases would be afforded a better opportunity of recovering the oil under his tract if he drilled his wells up within 330 feet of the lease lines?

A Well, he would so far as the north edge of those leases are concerned; but on the other hand, if he drilled within 330 feet and crowded the field, he wouldn't be entitled to as much oil.

Q Well, now, isn't that last statement a conclusion? We'll let it end for whatever it is.

MR. ADAIR: I have no objection. That's all we have of this witness.

REDIRECT EXAMINATION

Q (By Mr. Kellough) Mr. Christie, adopting the assumed set of facts which Mr. Adair assumed, which is that there is a water drive going north by east, wouldn't the same drainage characteristics apply to the Texas-Pacific Coal Company well farther up the assumed dip?

A If they drilled a well, yes, sir.

Q Is it not true in any water-drive reservoir that there are locations which will be more productive than others in the field?

A Yes, sir.

Q Can you say as an engineer that in any oil field or, particularly in any water-drive field, that each and every lease will recover the same amount of oil as each and every other lease?

A We have no way of controlling the oil underneath the boundary line, though we have ways of controlling oil by the mechanics of the reservoir. It makes no difference whether the spacing is 10 acres, 20 acres, 40 or 80. We will continue to get the share of the oil in the reservoir and not underneath any particular lease, depending on the mechanics of the reservoir.

Q Would it seem to you, then, as an engineer, reasonable to

assume that a spacing program should not attempt to equalize recovery by surface acreage, but should, as much as possible, assure that each owner recovers the proportion of the amount of oil to which, structurally, he would be entitled to recover?

A That is correct. It would be a very involved matter to devise a formula in any type of reservoir whereby each lease owner would get exactly his share of the oil underneath his particular tract.

Q If any inequities in any material degree should be developed by future evidence, wouldn't it be your recommendation that the Commission be authorized to grant an exception and reduce the allowable, probably separately; and would that in your opinion be sufficient to assure the owners of recovering the oil to which they are justly entitled?

A Well, if they had some way of determining how much they are justly entitled to under reservoir mechanics, I think it would, yes, sir. They would have that right.

RECROSS EXAMINATION

Q (By Mr. Adair) In any event, Mr. Christie, the owner of a separate tract would be more likely to get the oil, to recover the oil under his tract with two wells than he would with one, wouldn't he?

A Well, he would get the same amount of oil, but it might be coming off of somebody else's tract; but eventually, he would get the same amount of oil from the pool.

Q Assuming continuous permeability?

A Yes, sir.

Q That is a factor in your answer, isn't it?

A Yes, sir.

MR. ANDERSON: May I ask Mr. Christie a question?

COMM. SHEPARD: Yes. Give your name.

MR. ANDERSON: Bob Anderson of Roswell, representing Malco Refineries of Roswell, New Mexico.

Mr. Christie, have you any estimate of recovery in the Devonian?

THE WITNESS: No, I haven't made those observations.

MR. ANDERSON: Well, do you think, in effect, the basic pattern can be determined before you have any idea of recovery per acre?

THE WITNESS: I don't see that recovery has any bearing on it.

MR. ANDERSON: Well, I should think it would.

THE WITNESS: Except from an economic standpoint.

MR. ANDERSON: Well, that, I should think, would be one of the Commission's principal concerns. In other words, the principal reason, I should think, for increasing the acreage pattern would be to make it economically feasible. In other words, if the wells are not commercially productive on 40-acre spacing, it would be necessary to increase the pattern so that it can become commercially productive. There might be a saving of the oil and of course, the Commission and everybody is interested in conservation. But there is a question, too, will the wells be profitable? I think the testimony is 190 feet of pay and with the water drive, that recovery from acreage is very, very, -- substantially much higher in most fields in New Mexico. The 40 acres would not, for instance, be necessarily profitable, or more profitable than if you had less cost of development per acre.

MR. KELLOUGH: If the Commission please, I'm sorry I'm not acquainted with the gentleman. He is testifying, and if

he has an interest in this area, if his company does --

COMM. SHEPARD (Interrupting) He's just asking a question.

MR. KELLOUGH: That is for information --

COMM. SHEPARD (Interrupting) Well, of course. Mr. Adair, do you have any more questions?

Q (By Mr. Adair) The answer is, you get the same amount of oil --

A If you get the same amount of oil, or substantially the same amount of oil, why spend from $225,000.00 to get it, which the public eventually is going to have to pay for.

COMM. SHEPARD: Any further questions?

MR.KELLOUGH: No.

MR. McCORMICK: Do you rest?

MR. KELLOUGH: Yes. If the Commission please, we rest, with the privilege of calling a rebuttal witness, if we may have it.

COMM. SHEPARD: All right. We will take about a five or ten minute recess.

(Whereupon, at 2:25 o'clock, P.M., a recess was taken, the hearing being re-convened at 2:35 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order,

At this time, I want to introduce Governor Mabry. (Applause).

GOV. MABRY: Thank you a lot.

MR. ADAIR: If the Commissioner please, our witnesses have not yet been sworn.

COMM. SHEPARD: Will you swear them, Mr. Graham? (Done). You may proceed, Mr. Adair.

MR. ADAIR: Thank you, sir.

G. R. CARTER

being first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Will you state your name to the Commission, please?

A G. R. Carter.

Q Where do you live, Mr. Carter?

A Midland, Texas.

Q By whom are you employed?

A Texas-Pacific Coal and Oil Company.

Q What capacity?

A Division Geologist.

COMM. SHEPARD: Speak louder, please.

Q (By Mr. Adair) Will you state briefly your training and experience as a geologist?

A I am a graduate from the University of Oklahoma, have a Bachelor's Science Degree in geology. I have worked as a geologist for 13 years, eleven and a half of those being for the Gulf Oil Corporation, and since 1947, for the T.P. Coal and Oil Company.

Q In your position as a geologist for Texas-Pacific Coal and Oil Company, are you familiar with the area known as the Bagley Area in Lea County, New Mexico?

A I am.

Q Does Texas-Pacific Coal and Oil Company own leases in that area?

A They do.

Q How many different or separate leases do they own in the Bagley area?

A They own three.

MR. ADAIR: At this time, Mr. Commissioner, I offer in evidence photostatic copies of three leases, mentioned by Mr. Carter, and the purpose for putting them in evidence will be apparent when I ask Mr. Carter this next question.

Q (By Mr. Adair) Mr. Carter, do you have a 40-acre tract in the Bagley Area that is covered by a single lease?

A Yes, we do.

Q And that lease in turn covers additional acreage not located within the Bagley Area?

A That's right.

MR. ADAIR: If the Commission please, I offer these in evidence.

MR. KELLOUGH: No objection.

COMM. SHEPARD: They will be admitted.

(Tex.-Pac. Exhibit No. "B" was received in evidence).

MR. McCORMICK: Which 40-acre tract is that?

MR. ADAIR: The SE¼SE¼ of Section 1, 12 South, 33 East.

Q (By Mr. Adair) Mr. Carter, I now ask that you turn around and face the board. I now refer you to the plat on the lands, the plat on the board, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "C", and ask you to explain, please, what that plat is.

A That is a lease ownership plat. The red indicates the leases held by the Amerada; the yellow, leases by the T.P. Coal and Oil Company; and the brown, leases on other companies.

Q I refer you next to the plat immediately to the right, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "D", and ask you what that plat represents?

A That is a mineral fee ownership plat, the blue indicating the

state owned leases, the yellow or orange, the federal leases, and the green, individual leases.

Q All right. I refer you next to the plat that is located immediately to the right of the mineral ownership plat, and ask you what that plat represents? It is marked Texas-Pacific Coal and Oil Company's Exhibit "E".

A That is an interpretation on the geology on top of the Glorieta Sand in the Bagley Area.

Q Now, when you say that is an interpretation, you do not mean that you will -- that that is the way it actually exists under the ground, but in your opinion, that is a reasonable interpretation, is that right?

A That's right.

Q Based upon the wells that have now been drilled?

A That's right.

Q I refer you now to the plat located immediately below, and marked, Texas-Pacific Exhibit "F", and ask you what that represents?

A That is a contour map of the Bagley Area as interpreted on the top of the Pennsylvanian Formation.

Q There again, you do not mean that that is exactly as the conditions in the Pennsylvanian formation will be found underground, but that is a reasonable interpretation, in your opinion, based upon the wells that have now been drilled in the area?

A That's right.

Q I refer you to the plat remaining on the board, marked Texas-Pacific's Exhibit "G", and ask you what that plat represents?

A That is an interpretation of the geology in the Bagley Area as contoured on the top of the Devonian, I mean, to the base of

the black shale.

Q Which Amerada calls the top of the Devonian in testimony here in this hearing?

A Right.

Q Now, there again, Mr. Carter, I ask you whether or not you say that is exactly the way the contour of the Devonian formation will be after the field is drilled up?

A That is not. It is merely an interpretation from the data we now have.

Q In your opinion, it is a reasonable interpretation?

A Right.

Q Is there any portion of that contour there about which you can feel reasonably certain?

A I can feel reasonably certain in the immediate area between these wells, extending from T.P. State B, down through and including the Amerada No. 1 Caudle well.

Q Now, also referring you to the same map, Exhibit "G", what does that blue line which follows closely the red line around the contouring, indicate?

A That is our estimate of the water level.

Q Found in the Devonian?

A Yes.

Q That assums a level water table?

A Yes, sir, that's right.

Q And that also would mark -- according to that contouring interpretation -- that would mark the limits of production where you have it contoured?

A That's right.

Q In the Devonian?

A That's right.

MR. ADAIR: If the Commission please, we offer all these

plats in evidence.

COMM. SHEPARD: They will be accepted.

(Tex.-Pac. Exhibits Nos. "A", "B", "C", "D", "E", "F", and "G", received in evidence).

MR. McCORMICK: I would like to ask who made these interpretations, you?

THE WITNESS: The geologist in the Ft. Worth office and myself.

MR. McCORMICK: Under your supervision?

THE WITNESS: Yes.

MR. ADAIR: Any other questions, Mr. McCormick?

MR. McCORMICK: No.

MR. MORRELL: May I ask a question of this witness?

MR. ADAIR: Yes.

MR. McCORMICK: Wait until he is through, Mr. Morrell.

MR. ADAIR: I have no objection.

MR. McCORMICK: I think it is better order to wait until after you are through entirely.

Q (By Mr. Adair) How many wells has Texas-Pacific Coal and Oil Company completed in the Devonian reservoir in the Bagley Area?

A The Texac-Pacific Coal and Oil Company has completed one.

Q Will you give the geological data to the Commission on that one well?

A The well was completed November 23, 1949, total depth 10,914, with base of the black shale being encountered at 10,721 feet. Based on Schlumberger interpretation, we considered the top of pay encountered 10,770 feet. The well was drilled to 10,824

and a core taken from 10,824 to 874, an interval of 50 feet, of which 47 feet 2 inches were recovered. The well was then cored from 10,874 to 914, an interval of 40 feet, of which 39 feet were recovered. Drill stem tests in the bottom from 874 to 914 showed flowing production, and the well was acidized with 500 gallons of mud acid and 5,000 gallons of regular acid, completed with an initial potential of 2848 barrels, or at the rate of 202 barrels per hour.

Q Did you mention what the casing size was?

A This well was drilled to a total depth of 10,914, and casing was set at 10,765 feet. That was 7" casing.

Q So that if it is necessary to go back into the well, you have a large enough casing to do so?

A That's right.

Q And drill deeper or otherwise?

A Right.

Q Do you have a Schlumberger log of this well?

A I do.

MR. ADAIR: If the Commission please, we offer in evidence the Schlumberger log covering Texas-Pacific Coal and Oil Company State B 1 well, concerning which Mr. Carter has been testifying.

EXAM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "H" was received in evidence).

Q (By Mr. Adair) Do you have a core analysis? Did you have a core analysis made, Mr. Carter, of any part of that core recovery that you have?

A Yes, we cored from 824 to the total depth of 10,914, two cores on which I stated the recovery, and the upper 13 feet of

the core from 824 to 874 was analyzed; and all of the core from 10,874 to 924 was analyzed.

Q Is that the core graph?

A It is.

MR. ADAIR: If the Commission please, we offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibits Nos. "I", "J", "K", "L", were received in evidence).

MR. McCORMICK: Will you have him explain in lay terms just what that core graph shows?

THE WITNESS: The core graph was made by the Rotary Engineering Company of Midland, and it shows the porosity, the permeability on this side, the green being the oil saturation and the red the water saturation in the core.

Q (By Mr. Adair) Now, referring to that core graph, you have varying degrees of porosity and permeability, do you not?

A That's right.

Q Going all the way from dense which would mean impermeable?

A That's right.

Q Insofar as oil is concerned at least, to a permeability of some 170 millidarcies?

A That's right.

Q Now, permeability is generally measured in millidarcies, is that right?

A Right.

Q You have a porosity running all the way from within -- what ranges?

A Porosity ranges from as much as 7 -- no, that's in the upper portion. The upper core shows from 7 percent to approximately 1 percent.

Q Porosity 7 percent to 1 percent?

A The lower section shows from -- the minimum appears to be approximately 3 percent and the maximum 12 percent.

MR. McCORMICK: How does that compare with other pools?

THE WITNESS: Well, I am --

MR. McCORMICK: (Interrupting) I mean, is it good or bad or medium, or what, so far as porosity is concerned?

THE WITNESS: I would say it is approximately average in the type of reservoir that we have here.

MR. McCORMICK: Approximately what?

THE WITNESS: Approximately average for the type of reservoir that we have here. It might be a little higher than average.

MR. McCORMICK: That is the porosity?

THE WITNESS: Yes.

MR. McCORMICK: And the permeability, is that higher? Higher than the average?

THE WITNESS: Well, I am not in a position to give those -- I just don't know. Porosity is in portions.

Q (By Mr. Adair) You qualified your answer by saying it is higher than average in porosity in portions?

A Yes.

Q Now, why did you say that?

A Well, for instance, in dealing with Andrews production, you have got a different type of porosity than you have got in this well in this area.

Q Well, now, referring to this particular well, why would you say that in portions only it was higher than average, or was average? Do you or do you not have a dense zone in your coring in this well?

A We did, extending from 10,830 to 10,874.

Q And by dense you mean there was absolutely no oil or no porosity or perm? bility within that zone?

A That's right.

Q Do you have with you a copy -- I mean, a portion of the core that was taken out of that dense zone?

A We do.

Q Now, you actually had a portion of this dense section analyzed, did you not?

A Yes, we did, from 830 to 824.

Q What were the results of that analysis?

A It showed no permeability, and porosity of 1 percent or less, and water saturation up to 30 percent.

MR. ADAIR: If the Commission please, we offer this core in evidence.

COMM. SHEPARD. It will be accepted.

(Tex.-Pac. Exhibit No. "M" was received in evidence).

Q (By Mr. Adair) Now, in addition, do you have a piece of the core that was taken out of the bottom of the hole?

A That's right, production 10,913 feet.

Q And you said -- this is the core I have in my hand?

A That's right.

Q And you said this particular area was analyzed, did you not?

A Right.

Q What did that show with reference to porosity and permeability?

A Porosity approximately 6 percent and permeability of about 12 millidarcies.

Q Would you say that was more or less than average for this

type of reservoir?

A Well, based on this core graph, I would say it was less.

Q In other words, based upon the core graph which you have in front of you, it would appear the formation was tightening up down where you bottomed your hole?

A That's right.

MR. ADAIR: We offer this in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "N" was received in evidence).

Q What are these black flakes or streaks in this core, Mr. Carter?

A That is black residual material with flakes of some shale in it.

Q Is that shale permeable?

A It is not.

Q In any event, based upon your coring of this Texas-Pacific B 1 Well, you have found that the reservoir is intercepted by a thick, dense zone and in those portions of the reservoir that are permeable, the permeability varies to a great degree, is that correct?

A That is right.

Q And based upon what you have found in this well, and based upon your comparison of the Schlumbergers of this well and Schlumberger survey of the Amerada B.T.A. No. 1 well, would you say that it is likely that Amerada drilled through a similar dense zone in that well?

A That is possible.

Q In other words, you found coring kicks which you thought you could possibly correlate, or could be correlated?

A That's right. Now, based on those kicks, I don't think they would have had quite as thick a zone, but I do think there was a dense zone in the upper part.

GOV. MABRY: We can't hear.

THE WITNESS: Based upon the interpretation of the Schlumberger, I do not think their zone was possibly as thick as we had in this well, but I do believe that there was a dense zone in the upper part of their reservoir.

Q Of their pay section?

A Right.

Q Now, it doesn't make any difference, does it, how thick this dense zone is, if it is present it is sufficient to stop the migration of oil or the flow of oil, is that correct?

A That is right, if it is present.

Q Mr. Carter, I will ask you what this exhibit is here, that has been marked Texas-Pacific Exhibit "O"?

A That is an overlay contoured on top of the Devonian, the copy of the map, the contour map that is shown as Exhibit "G".

MR. ADAIR: We offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "O" was received in evidence).

Q (By Mr. Adair) I will ask you, Mr. Carter, to place that overlay over the lease ownership map that is marked as Texas-Pacific's Exhibit -- what is the exhibit number on that, Bob?

MR. SCHAEHLE: Exhibit "C".

Q (By Mr. Adair) -- Exhibit "C". Now, your overlay is -- your contouring on this overlay, as you said, is exactly the same as you have it here?

A That's right.

Q And you said when this was offered in evidence, that this is not what you guaranteed that would be found down in the Devonian reservoir, but was a reasonable interpretation of it, as a geologist, based upon the information you have from the wells now drilled in the reservoir, is that right?

A That is right.

Q And you further said that you did feel fairly definite and certain about that portion of the contour map which extends from Texas-Pacific B 1 well down to Amerada Caudle well?

A That's right.

Q That is because you have more controls in that area?

A That is correct.

Q Now, assuming such a situation, without saying that it is so, as is indicated upon this contour map, what do you find with reference to these leases located along this area that I am now drawing within the lines 67-50 contour?

A That would indicate to me that in that band of contours between 6700 and 6750, there would be a possibility of 50 feet of pay within that band in the Devonian reservoir.

Q Going down to what?

A Water.

Q To water?

A Yes.

Q And all leases lying outside this blue band, assuming the correctness of this interpretation, would be dry?

A That's right.

Q All right. Now, let's move this overlay and place it over the mineral fee ownership. (Done). Now, the same would hold true, of course, on that, that the leases outside the blue line or water line would be -- would probably be dry, and the

leases inside would have a chance to produce?

A That's right.

Q Now, applying this contour map to this area right here, what do you find? First,before you answer that -- there are a lot of little circles on these maps. What do they mean?

A They represent the proposed pattern of the Amerada, for the proposed pattern of spacing.

Q All right. Now, placing this overlay on this map and tracing these contours that we have talked about, and assuming they are no more than an interpretation, but they are an interpretation, what do you find here in the N½NE¼ of Section 2?

A I find that well would be too low to produce in the Devonian.

Q While this tract here, which would be next to it, would produce in the Devonian?

A It could possibly produce. It would be higher than that structure if that interpretation is right. It could produce.

Q It could produce in the Devonian?

A Yes.

Q Now, coming down to this area down in here, what do you find with reference to this 80 acres, this 80-acre unit, which is the E½NW¼ of Section 11?

A I find that based on that interpretation, that the NE¼ of that quarter would have a chance of production in the Devonian, whereas on the center leases in the 40, the SE¼NW¼ would be out of the picture.

Q In other words, following the pattern proposed here at that particular 80-acre tract, you would get a dry hole, while you would have a chance to get an oil well by moving up here?

A That's right.

MR. VEEDER: May I ask a question?

MR. ADAIR: Surely.

MR. VEEDER: I would like to ask Mr. Carter what control he has for contours over here. (Indicating). You have a control here, whereas your control for your contours --

THE WITNESS (Interrupting) That was based on spacing of controus, keeping the same spacing that you would in an area where you definitely do have control.

MR. ADAIR: Mr. Veeder, it may save some time if you will wait until I finish with Mr. Carter, and then ask him any way you want to.

Q (By Mr. Adair) You don't say, Mr. Carter, that this falls off this way for sure, do you?

A No, that is just my interpretation.

Q But you do say it falls off somewhere?

A Right.

Q And some way over here? (Indicating).

A Right.

Q And you do say that through here, you are fairly certain of your work?

A That's right.

Q Let's take the overlay off and place it upon the map on which Mr. Christie drew the circle there. (Done). Now, Mr. Carter, this circle was assumed by Mr. Christie in a rough manner, to represent the drainage area of the State BTD well No. 1. Now, looking at that circle through the overlay, and looking at the fixed- pattern location, which is right there in the SE -- it is not on the map, so we will put it there. You find, do you not that by fixed-pattern spacing, you will get a dry hole down here, whereas actually you would get some oil up here?

GOV. MABRY: Better identify your location there.

MR. ADAIR: Yes.

THE WITNESS: SE¼NE¼, Section 11, based upon that interpretation, would not produce. It would be dry in the Devonian, whereas, the NE¼NW¼ of Section 11, based on this interpretation, would have a chance for production in the Devonian.

Q (By Mr. Adair) And B.T.D. well would drain some oil from underneath this tract to which you have referred, which will not be compensated for along the lines that Mr. Christie talked about, by draining on fixed-pattern spacing?

A I believe that's right, providing that is his interpretation of unitization. I think that's right.

Q All right, Mr. Carter. Will you come back around. Now, Mr. Carter, I refer you here to what has been marked as Texas-Pacific Exhibit "P", and ask you what that represents?

A That is a cross section from southwest to northeast, through the Amerada Caudle, the Amerada B.T.D., the Amerada State B.T.A., Texas-Pacific Coal and Oil Company, State B 1; and east to the Mid-Continent State No. 165, Pennsylvanian producer.

Q Now, that cross section is cut across the line that is shown in blue in Texas-Pacific Exhibit "O", -- that piece of acetate there?

A That is true.

Q The line runs from "A" to "A" prime, and on the piece of acetate is a red line of that cross section?

A That's right.

Q What do these colors across the top represent?

A Those colors indicate the ownership lease, ownership in the Bagley Area, the red being the Amerada acreage, the organge or the yellow, the Texas-Pacific, and the brown, the Mid-Continent.

Q The next colors across the exhibit, what does that mean?

A That is the fee ownership, or mineral ownership.

Q Explain that, please.

A The orange is the federal; the green, the individual; the blue, the state.

Q And the brown lines running down through the exhibit, what do they mean?

A They are property lines.

Q Separating the various leases and/or mineral fee ownership?

A That's right.

Q Now, will you explain what these various interpretations down this way mean?

A The base of the dark blue and the top of the light blue is the top of the Pennsylvanian formation, as interpreted by us, by the T.P. Coal and Oil Company. The blue is all Pennsylvanian down to this point, which is the top of the Mississippian lime. This next zone is the top of the black shale at the base of the Mississippian line; and this line is the base of the black shale, or, as I believe from the testimony this morning, is considered the top of the Devonian by the Amerada.

Q What have you considered the top of the Devonian in this interpretation of this c ross section?

A I have considered the base of the black shale.

Q No, I mean, what you considered the top of the Devonian?

A Well, I have considered it down within, below the base of the black shale, based on sample interpretation and electric log interpretation.

Q I simply point that out as there is some difference between you and Amerada's geologist in picking the top of the Devonian strata. The area delineated in red down at the base of our map

is the area which the Amerada has considered as the pay section through the well, is that right? You heard their testimony?

A I believe -- I wouldn't know whether that exact top is the top of their considered pay.

Q Will you go over to the Texas-Pacific B 1 well, and you find a box down around the bottom of it. Will you explain that box and explain the enlargement?

A This is an enlargement of cored section of the State B well, in other words, from a depth of 10,824 feet to a depth of 10,914 feet.

Q Just a minute. You don't mean to say all of this was cored? Your coring actually started somewhere in here?

A Yes, it was from a depth of subsea datum 8651 to a depth of minus 6755, is the way we considered the water level.

Q That is assuming a uniform level water table throughout the field?

A That's right.

Q What does this greyish colored area represent?

A Dense zone, which we cored from 10,830 to 10,874.

Q And which, from the interpretation of Schlumberger logs, you feel was found in Amerada's log to possibly some lesser extent?

A Possibly so.

Q In the B.T.A. No. 1 well?

A Yes. There is a kick that is indicative that it could be the same zone -- same dense zone as we found.

Q And I believe you testified, did you not, Mr. Carter, that from your information, your examination of the well sample, the sample log, as well as your examination of the core and core analysis, that there was no uniform permeability through-

out the pay section?

A Yes, that is based primarily on the cored section, plus the interpretation that was put on the electric log as seen opposite that core section.

MR. ADAIR. All right. We wish to offer this in evidence.

COMM. SHEPARD: It will be admitted.

(Tex.-Pac. Exhibit No. "F" was received in evidence).

MR. ADAIR: That is all.

CROSS-EXAMINATION

Q (By Mr. Kellough) Mr. Carter, since you have the cross section on top, I want to ask you a question about that. With reference to this box arrangement here, if it perforated the whole section you could recover the oil from both of those areas indicated in red, could you not?

A You could recover it opposite those preforations in those red zones. There will be no object in recovery in the dense zone.

Q You are not contending that you need to drill an extra well in order to cover this by one well, and this by another well, are you?

A No, sir.

MR. McCORMICK: You are referring to Exhibit "P", for the record.

MR. KELLOUGH: For the record, I might state, the two zones I was referring to are shown in the box in red.

Q (By Mr. Kellough) Now, referring to Exhibit "E", this I believe you stated was a contour of the Glorieta Sand?

A As we interpret it, it is a contour of the Glorieta Sand.

Q That is not the Devonian?

A No, it is not.

Q And that is not a sand or formation that is involved in this hearing here, is that right?

A No, sir.

Q I also refer you to exhibit marked "F", that "F", I believe you stated was a contour of the Pennsylvanian formation?

A That's right.

Q And that is not the Devonian?

A No.

Q And that is not any formation referred to in this proceeding?

A That's right, so far as I know.

Q You also introduced in evidence a core analysis of T.P. well.

A That's right.

Q And I understood you to state that core analysis did not show a uniform porosity or permeability of the reservoir, is that correct?

A That is correct.

Q But did you also state that it did not show any continuity?

A I did not state that.

Q And I believe you testified that the core analysis showed a condition which is characteristic or average, I believe, was the word you used, of all Devonian Pools?

A To my knowledge.

Q To your knowledge, and in certain parts it was superior, I believe you testified?

A What?

Q And in certain sections it was superior?

A That's right.

Q Now, referring to Exhibit T. P. "O", which you interposed on Exhibit "B" and on the two exhibits showing the royalty and lease ownership over on the board. It is true, is it not, that in any oil field, regardless of the spacing pattern, that you will also have edge wells?

A I'm not --

Q (Interrupting) You will always reach the edge of pools at some time?

A I'm not a reservoir specialist. I'd rather not answer the question. I would rather that would be referred to an engineer.

Q Well, you have testified with reference to the drainage of this well, have you not?

MR. ADAIR: He testified with reference to the drainage area as delineated by Mr. Christie.

Q (By Mr. Kellough) Can you explain to the Commission how any spacing pattern will prevent a well from draining across a lease line?

A No, I can't.

Q It is not your position that a spacing pattern should be developed and based according to surface ownership, is it?

A Will you state your question over?

Q Are you taking the position that a spacing pattern should be developed according to lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness has taken any position with reference to that at all. If Mr. Kellough wishes to make him his own witness in that matter, it is perfectly all right. But I wish to call the attention of the Commission to the fact that he has not testified on that point at all.

GOV. MABRY: Well, he is probably entitled to ask him.

He is testing his conclusions as a geologist.

MR. ADAIR: All right, sir.

A You are asking if I am in a position to testify that those spacings should be placed on surface-acreage pattern, is that the way you worded it -- surface spacing?

Q In your testimony, I believe you endeavored to show, and prepared a number of exhibits to show that according to the spacing pattern which is being asked for at this hearing by the applicant, that it would result in the drilling of certain dry holes?

A That's right.

Q And also by the preparation of these exhibits and by the reference of counsel to the drainage area shown, you also, as I understand your testimony, infer or attempt to leave with the Commission the impression that a well will drain some oil from under somebody else's lease?

A In that instance, it would drain some oil from under somebody else's lease.

Q Now, then, will you explain to the Commission first, how you can avoid drilling dry holes by arranging the spacing?

A By structural position, if you have correct structural position. I'm not saying you won't drill dry holes, because all this is, is an interpretation up here. It was not exactly brought out, but using that as a basis, and if that be fairly correct, then wells drilled within -- outside of the blue line zone here, in all probability would be dry. They would be too low, assuming you have a level water table.

Q That's right. Now, that location you referred to of the proposed leases in the E½NW¼ of Section 11 --

A (Interrupting) That was the location south?

Q South of the water line.

A Yes.

Q And you testified that a well drilled in that location would, in your opinion, result in a dry hole?

A If my interpretation of the structure is right.

Q Now, you heard the testimony of witnesses for the applicant this morning?

A Yes, sir.

Q Now, in your opinion, is there anything in their testimony which would prevent, if those circumstances are true, the drilling of a well in the N½ of that particular unit?

A I'm not familiar -- I haven't looked at the map this morning, on the north-south line-up that you had, and what your exceptions were going to be on the east-west line there. You said there would be some specific exceptions there.

Q Did you hear the testimony that in event of -- for good cause shown, and an exception is subsequently desired, that it was our recommendation that such an exception be allowed by the Commission?

A I did.

Q And did you not hear the further testimony that in that event, it was our recommendation that the Commission, under the facts which then exist, determine to what extent the allowable should be reduced?

A That's right.

Q Now, is it your position that a unit, whether it be 40 acres or 80 acres, which contains non-productive acreage, should receive the full allowable?

A In that particular instance where you have got a 40-acre unit, the low water table as assumed, and with structural in-

formation to definitely confirm that, I would not think so. But that would be contingent upon information that would show that.

Q Then, it is your opinion that if a unit does contain non-productive acreage, it should receive a reduction in allowable, am I correct in that statement?

A Well, if you are -- as you have implied, we will assume the 80 acres for a well. I would think that the 40 acres -- all this is contingent upon the fact that the structural position would show that the other 40 acres was definitely out -- would be definitely dry.

Q Now, assuming that to be true, would it be your contention that a unit containing 40 acres of non-productive and 40 acres of productive, should receive a full allowable? Do you contend that should be done?

A In other words, you are asking me --

Q (Interrupting) I'm asking you if you should reduce the allowable because there is any non-productive acreage within a unit.

MR. ADAIR: An 80-acre unit?

Q (By Mr. Kellough) Either 40 or 80-acre unit.

A If there is any -- whether the allowable should be reduced?

Q That's what I'm asking you, assuming, you know, that it is non-productive?

A I wouldn't think so. I wouldn't think that it should be reduced.

Q You would think that an operator or a person is entitled to receive the same amount of oil?

A That's right.

Q From a unit which is in part non-productive and is a person

who has a well upon a unit all of which is productive, is that your testimony to this Commission, is that correct?

A That is correct.

Q All right. Now, then, if this field pool were developed on 40 acres, would there be any unit that would be partially non-productive?

A There probably would be. I would have to throw up that acetate and see. I would like specific instances.

Q Well, as a matter of fact, there would be, wouldn't there?

A Well, there probably would, but I don't know. I mean, I would rather have a specific instance there that you would like to ask me about -- my opinion.

Q I'm asking you whether, under the structure, your map which you have prepared, if that was developed on 40 acres, would there be any unit which would contain in part non-productive acreage?

A Based on that, this portion would right here (indicating), of that 40 acres.

GOV. MABRY: The witness said, "right here," pointing his finger at something.

THE WITNESS: It is the E½SE¼NW¼ of Section 1, 12 South, 33 East.

Q (By Mr. Kellough) In other words, were this developed on 40 acres, you would have some units which would contain non-productive acreage?

A That's right.

Q So that it would not correct the situation which you testified about to change the spacing pattern, is that right?

A I wouldn't think that; you would be reducing your amount of acreage that would be non-productive, whereas you would have a

chance to -- a change on State-wide rules of placing that on the 330 location, as the State-wide rules now apply.

Q Now, referring once more to Exhibit "C", as superimposed on Exhibit "B", it was the purpose of your testimony to convey the impression to the Commission that this well would drain, the B.T.D. well, from under leases owned by other parties than the owners of that well?

A That is based upon your engineer's testimony, as that being the drainage pattern.

Q Now, that would not be corrected by drilling one well to every 40 acres throughout the field, would it?

A In this particular instance, it would be corrected.

Q But you cannot correct or change the drainage in an oil field by the density of spacing?

A You cannot change the drainage, no, sir.

Q Is it or is it not your opinion that well spacing should be based upon lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness is qualified or has been qualified to answer that. He is not an engineer. He qualified as a geologist.

MR. McCORMICK: Are you qualified to answer that?

THE WITNESS: I'm not qualified as an engineer, no, sir. I think that would fall within the reservoir study.

MR. McCORMICK: Do you have anything you wish to state on this subject?

THE WITNESS: No, sir.

MR. McCORMICK: No opinion you wish to state on this subject?

THE WITNESS: None I wish to make.

MR. McCORMICK: Nothing you could back up, is that right?

THE WITNESS: That's right.

MR. KELLOUGH: I believe that's all. I have no further questions.

COMM. SHEPARD: We will take a five-minute recess.

(Whereupon, at 3:30 p.m., a recess was taken, the hearing being re-convened at 3:40 P.M.).

MR. SPURRIER: Are you ready?

MR. ADAIR: If the Commission please, I had one or two more questions of Mr. Carter.

REDIRECT EXAMINATION

Q (By Mr. Adair) Mr. Carter, I'm afraid you might have left the wrong impression in answer to Mr. Kellough's question awhile ago. Is there or not continuous permeability through the pay section of the Devonian reservoir in the Bagley?

A There is not, based on the dense zone we have found.

Q Second, do you as a geologist, see any reason why you should get awey from the State-wide rules at this time in the development of this Bagley Devonian reservoir?

A I see no reason whatsoever.

MR. ADAIR: That's all.

MR. McCORMICK: Mr. Morrell, do you have a question you wanted to ask Mr. Carter?

MR. MORRELL: I wanted to ask Mr. Carter, why the bulge in the south end of the structure as you had interpreted it?

THE WITNESS: On the Devonian?

MR. MORRELL: On the Devonian.

THE WITNESS: You pull it down from the B.T.D., with a subsea datum amounting to minus 6615, to the Gaudle amounting to minus 6749. The spacing is coming off from here (indicating) to here, and increases down this way, which necessitates pull-

ing the contours down to make this point.

MR. MORRELL: Is that the -- that is a mechanical interpretation? It doesn't necessarily follow the geological evidence?

THE WITNESS: Well, Mr. Morrell, I don't know whether I understand you or not.

MR. MORRELL: Did you generally find the structure with a bulge on one end of your closure to the high as the limit?

THE WITNESS: That's right.

MR. MORRELL: Normally, as you go down-structure, that same elipse would be reflected?

THE WITNESS: I think this is the most conservative manner of contouring.

MR. MORRELL: Well, I would agree on that. It is ultra conservative.

THE WITNESS: That was my statement.

MR. McCORMICK: Any other questions?

MR. KELLOUGH: No further questions of this witness.

MR. SPURRIER: Mr. Carter, just for information, of course, how did you determine this water contact?

THE WITNESS: That was based on the B.T.A. well, which, after they ran pipe, 11,200 approximately -- that I'm not positive of -- about these figures. They tested from 11,010 to 11,020, and these are rough figures. You have the figures somewhere in the testimony -- they got 4,000 feet of oil plus 6,000 -- excuse me, I mean 600 feet of water. Then they plugged back to 10,980, perforated and got all oil from, I believe it was from 956 to 80, is that right?

MR. VEEDER: No, perforation from 950 to 965 they tested there.

THE WITNESS: Anyway, the interpretation was based on tests where they got the water.

MR. SPURRIER: Then, did I understand you to say that your cores, or the core, I guess I should say --

THE WITNESS: (Interrupting) There were two cores.

MR. SPURRIER: You stopped taking the bottom core at what you considered to be the water-oil contact?

THE WITNESS: No, I didn't.

MR. SPURRIER: That was strictly a misunderstanding, then.

THE WITNESS: Yes.

Q (By Mr. Adair) Is it true that on the map here, no matter how high your hole at the bottom, above to where you assume the water-oil contact to be is represented by that dash, the red section there in the box?

A Yes, that's right.

Q And from minus 6671 to minus 6675 would be 4 feet?

A Yes, it would be four feet.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other questions of this witness? Your next witness, Mr. Adair.

R. G. SCHAEHLE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Mr. Schaehle, you have testified and qualified before the Commission, before, have you not?

A Yes. That is R. G. Schaehle.

Q Mr. Schaehle, I hand you here what is marked as Texas-Pacific Exhibit No. "Q". We'll put it up on the board. (Done). I will ask you to explain to the Commission please, what that

represents?

A That is a generalized or schematic section, cross section through a water-drive reservoir.

Q Based upon what assumptions, Mr. Schaehle?

A There are several assumptions to make. First, let me say this does not apply by scale to any specific area, or it does not follow this cross section. There are certain assumptions here. One, the uniform porosity and permeability throughout, which we wouldn't have here, but uniform porosity and permeability is assumed. That assumption is like taking a set of marbles, all uniform, all the same size, and you would have a number of toys exactly alike. Further, it was assumed that the oil-water level, or oil-water contact is level. On this thing then we show 5 wells through there, through property lines. In addition to that we have put an idealized faulting on one flank. That is this line here, showing an off-set. Then, you see a heavy blue line at this point. Let us say first, under initial conditions, everything above this line marked, "Water line," was oil bearing in this typicalized section; that after the period of production, the water has moved vertically in this particular section, assuming the wells are produced correctly, and after some ex-period of production, it has reached this point.

Q By "this point" you mean --

A (Interrupting) Indicated by this line, and this is the water line after period of production, and this hatching here shows that recoverable oil has been withdrawn and been replaced with water.

This section shows certain features, shows flank on moderate or edge wells exemplified here and intermediate wells, and

a crestal well.

Let me call your attention to the property line which comes down through here. This edge well is washed out. It is done, when the water level gets to here.

Q There again is the same point that is marked there on the map as what?

A As water line after period of production.

Q Now, assuming that you took this edge well, Mr. Schaehle, and assuming that it is located in the center of the 40 as proposed by these rules --

A (Interrupting) That's right.

Q Will you assume that you have moved that well up within the 330 feet of your property line and will you demonstrate and explain to the Commission what happened?

A There the well, located in the center of a 40 of a fixed pattern, it could be there, down-structure, on an 80, after it is exhausted there and done, it leaves this much oil bearing formation, this much oil, that will never be recovered by this well.

Q That is the oil that was under that particular piece of property?

A That's right. If it is ever recovered it is going to migrate across property lines, as has been testified. However, if this is moved under -- let's say 330 feet, or applying State-wide standard rules at the present time, this well will be in this vicinity when it is drawn up. That well would continue to produce until this water level has gone to this point.

Q To the point which you have marked there with your pencil?

A That's right; and they would recover in addition, this much more oil that was under this property.

Q All right, Mr. Schaehle. Now, we can see down below that the oil-bearing portion of the Bagley Area, the Bagley reservoir, as indicated in Texas-Pacific Exhibit "P" -- now does that same situation that you have been talking about, moving the well up-structure to within 330 feet of the property line, would that apply anywhere on Texas-Pacific Exhibit "P"?

A Yes, it would apply several places. This, I assume is the location being drilled, and since they are all on circles, a well is located mid-ways. This is the property line, from here to there. At this point (indicating), you would probably get additional oil to what this well can produce.

Q And that would apply anywhere --

A (Interrupting) In here, the same in here.

Q Anywhere down-structure side of the reservoir?

A Anywhere you got off the crest of the structure.

Q All right, sir. Is there anything you wish to show or explain to us with reference to this generalized cross section?

A I haven't mentioned this fault. I believe the testimony earlier in the day was probably something like this. There is an idealized fault, a text-book thing. This well drilled down on the side exhausted this volume of oil, and it was washed out, and all the rest of the time, this amount of oil, from here to there has been gone.

Q You say, "from here to there," you are talking about the oil from the east, on the map?

A From the up-throw side of the fault right here. This oil that is under this piece of property has been produced by a well somewhere up-structure.

Q In other words, the property owner will -- we are assuming that well is located in the center of a forty, and assum-

ing that by moving 330 feet of the property line you can get on the up-side of the fault?

A That is correct.

Q That property owner under these circumstances here is losing a tremendous quantity of oil that will never be produced through his well?

A That is correct.

Q I will ask you this, Mr. Schaehle. Is there any reason as an engineer that you know of, why the Bagley Devonian reservoir should be at this time developed on any other basis, other than under the present State-wide rule?

A I do not.

Q Do you think -- in your opinion, do you believe that one well to 80 acres as proposed here will effectively drain all recoverable oil under the 80 acre tract, or under 80 acres of oil if you want to put it on that basis, in attempting to get away from correlative rights and move -- say you got Jim Doe's oil, some of his oil, and he got some of yours. In any event, one well, regardless of how it is located, will not, in your opinion, regain effectively all recoverable oil under 80 acres?

A No, it won't. It will not.

Q You base that opinion upon both the geological and engineering data that has been available to you and which you have heard here today?

A I do.

MR. ADAIR: I believe we have no further questions at this time. I would like to offer this exhibit in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "Q" received in evidence).

MR. McCORMICK: Any questions that anybody else has of Mr. Schaehle?

MR. ADAIR: If the Commission please, I would like at this time to make sure I have introduced all exhibits -- that all exhibits I have introduced are offered in evidence.

MR. McCORMICK: All of the T.P. Exhibits, from "A" to "Q" have been admitted in evidence.

MR. ADAIR: Thank you.

MR. McCORMICK: Mr. Adair, Mr. Spurrier wants to ask you some questions.

MR. ADAIR: Yes, sir.

MR. SPURRIER: Does the record show that you just showed that 80-acre spacing would limit correlative rights?

MR. ADAIR: No, I didn't intend to leave that impression. The impression I got from the Amerada questions and answers was that they were disregarding property lines in fixing their drainage pattern and drainage area, and I questioned whether or not that was proper.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other witnesses, Mr. Adair?

MR. ADAIR: No further witnesses.

MR. KELLOUGH: I would like a five minute recess, and I believe we would like to put on a rebuttal witness.

COMM. SHEPARD: Very well. We will have a five-minute recess at this time.

(Whereupon, at 4:00 o'clock, P.M., a recess was taken, the hearing being re-convened at 4:05 o'clock, P.M.).

COMM. SHEPARD: The hearing will come to order.

REBUTTAL

C. V. MILLIKAN

having been first duly sworn, testified as follows:

MR. McCORMICK: Any questions that anybody else has of Mr. Schaehle?

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MR. ADAIR: Yes, sir.

MR. SPURRIER: Does the record show that you just showed that 80-acre spacing would limit correlative rights?

MR. ADAIR: No, I didn't intend to leave that impression. The impression I got from the Amerada questions and answers was that they were disregarding property lines in fixing their drainage pattern and drainage area, and I questioned whether or not that was proper.

MR. SPURRIER: Thank you.

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MR. ADAIR: No further witnesses.

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COMM. SHEPARD: The hearing will come to order.

REBUTTAL

C. V. MILLIKAN

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Kellough) Will you please state your name and occupation to the Commission?

A My name is Millikan -- initials C. V.

MR. SPURRIER: Mr. Millikan has qualified many times for the Board. It is not necessary to qualify him.

MR. KELLOUGH: All right.

Q (By Mr. Kellough) Mr. Millikan, in your opinion on this Bagley Reservoir, will one well adequately and efficiently drain an area of at least 80 acres?

A I believe it will.

Q Would you care to make any statement to the Commission in explanation of your conclusion?

A I think we have several points that indicate that it is a good water-drive reservoir. I don't believe there has been any controversy of the testimony that it is a rather -- that it is permeable, I would say more-than-average permeable reservoir. As a general rule, we find that low gas-oil ratios are present where we do have a good water drive, that in itself not being conclusive, however; but as a general rule that condition does exist.

We have a pressure there that is about equal to hydrostatic head and about normal for that depth of reservoir. We have found a good quantity of water to the side and below the oil reservoir itself. The indications, I believe, are fairly good that we have a large aquafer, although we don't have sufficient control to demonstrate it definitely. We have, also, some other pools established in that same stratographic position that is the top of the Devonian in this general area, and on two of those, I think we have evidence of a good water drive. One of those is Cross-

roads. I am not familiar too much with the detail of that, but it is my understanding there has been no declining pressure in the approximate year and a half that those wells have been in. I believe two of them are producing some water and the dry holes that have been drilled around them have shown evidence of an ample quantity of water. That also has a low gas-oil ratio, but not as low as is present in these Bagley wells.

This field on which we have more history is just across the state line in Texas, in which there are eight wells in the field, which has been developed on 80-acre spacing, and that pressure under an allowed of 240 barrels a day on the 31 a day allowed, did have a little decline in pressure;earlier this year when the production was reduced we had an increase in pressure, during the first eight months of this year. I think, combining all of that gives very good evidence that it is quite reasonable to expect a good water drive in the Bagley.

Q Mr. Millikan, do you have any comment which you wish to make to the Commission with reference to the testimony regarding the dense areas which appeared in the core analysis introduced by the Texas-Pacific Coal Company?

A Well, those dense areas are, I think, as they stated, not anything unusual in these Devonian reservoirs, or for that matter in lime reservoirs, or for that matter, in any reservoirs. We have areas or intervals or stratums of varying permeability, and very often the strata is of greater or lesser thickness that might not even show any presence of oil, which I believe in our examination of samples have rather consistently shown oil and I think the permeabilities have been, perhaps, too low to get any appreciable amount of oil. I think probably some of

the testimony might be a little misleading regarding continuous or discontinuous, or uniform porosity and permeability. I think, it seems to me, in summing it up that there was not a clear distinction between vertical permeability and horizontal permeability.

Now, it is quite true, as was testified, I believe, by Mr. Schaehle, or Mr. Carter, or perhaps both, that where we run into these dense areas, that we probably do not have vertical permeability through those. In other words, this water that exists apparently entirely under this structure -- the water movement is not directly vertical. I don't believe the point was made clear, but I think that we do have lateral permeability through this reservoir. In the first place, that is a common thing to expect in reservoirs. We have that in all reservoirs, and I think the concrete evidence of that is the fact that we do have an accumulation of oil above water, with such evidence as we have being that it is a a relatively flat or level water table. And if we didn't have a continuous permeability through there, then how did the oil all get up there just in this, as someone referred to this morning, equivalent of a bowl turned upside down. And if we are going to have a water drive, which I think all have indicated probably exists -- and if you are going to have a water drive, you have got to have that continuity of permeability throughout the reservoir.

Q I have one further question, Mr. Millikan. Do you have any comments which you care to make as to whether the 80-acre spacing pattern, which has been proposed by Amerada, will result in a disruption of the correlative rights of the parties in the pool, which could be remedied by any other spacing program?

A I do not see that 80-acre spacing, or 160-acre spacing, or

40-acre spacing or 10-acre spacing, changes that picture at all. Certainly we have -- in any oil pool, we reach the edge of the pool, and we find certain parts, whatever the spacing unit may be, that probably lie beyond the limits of oil production, or beyond the limits of economic oil production. There may be some oil there, but it is not economic to drill. Then, that is, for all practical purposes, it becomes the limit of the pool. And there were no land lines there when that oil pool was formed. They have been put there subsequently, and they, as a general rule, are curve lines, as has been indicated in the testimony here; and regardless of the spacing, I think that those same conditions will exist. And the fact that we cannot recover all of the oil by 80-acre spacing, I don't see that it introduces any problems that wouldn't exist under any other spacing unit.

Q Then, in your opinion, the spacing pattern which we have presented here will not prevent any of the owners in that reservoir from obtaining their fair and equitable share of the oil in the reservoir?

A I think that under the recommendations that we have made here as to spacing and allocation, they will provide each operator, each land owner, each royalty owner, the opportunity to obtain his fair and equitable share of the oil from the reservoir.

MR. KELLOUGH: That's all.

CROSS EXAMINATION

Q (By Mr. Adair) Mr. Millikan, do you know what the virgin bottom-hole pressure in this reservoir was?

A About -- I believe according to Mr. Christie, it was 4261.

Q For your information, and Mr. Schaehle can verify this, the bottom-hole pressure in our well was 4390.

A What depth?

MR. SCHAENLE: We may be able to correct that. It is -- 24 feet from total depth of State B 1, is 10,890.

THE WITNESS: Well, that would show a little higher pressure than ours, reduced to the same datum.

Q (By Mr. Adair) Well, reduced to the same datum, what would 4390 be in the B.T.A. well?

A 44 -- about 4407.

Q 4407, and Mr. Christie testified that after 4 months' production, the bottom-hole survey was run, and what was the bottom-hole pressure?

A 4247.

Q Will you subtract those and give us the drop of the pressure -- the drop of the bottom-hole pressure in 4 months' production from your B.T.A. No. 1 well?

A Now, you want the difference in pressure?

Q The drop in pressure.

A You want the difference?

Q Assuming you converted our 4390 to whatever it was for your B.T.A. well, did you not?

A I'm assuming your pressure is correct.

Q And assuming our pressure is correct.

A That would be a decline of 260 pounds.

Q In four months' production?

A And assuming your pressure is correct.

Q Is such a decline alarming?

A Not to me, because I don't believe it exists that much. Our own pressure, taking the same pressure element, gets a variation of difference in pressure in the well there on the order of a quarter and a half of a percent.

Q You don't mean to say, at the same subsea datum point in the

reservoir that the pressure would be different, would you?

A I'm maintaining they will be the same.

Q Then what you don't have any confidence in is our bottom-hole pressure, is that correct?

A Well, I don't think I would go that far. Maybe our pressures are wrong. But at least, they were taken with the same instrument and relatively they ought to be about correct.

Q Well, assuming such a drop, would that not indicate that the water drive is not as effective as you have --

MR. KELLOUGH (Interrupting) Well, he is asking the witness to assume a set of facts which the witness has said does not exist, or rather, which the witness did not admit.

MR. McCORMICK: That is improper --

GOV. MABRY (Interrupting) We can't hear counsel. We can hear the witness clearly, but not counsel.

MR. ADAIR: Sorry, Governor. I asked Mr. Millikan to correlate the bottom-hole pressure found in our well to be 4390 pounds, into the pressure he would expect to find in his well at his depth, and he got a pressure of 4407 pounds, I believe. Mr. Christie testified that after four months' production, they took a bottom-hole pressure in the B.T.A. well, which is the well we are talking about; and he found it to be 4200 and what?

THE WITNESS: 47 pounds -- 4247 pounds.

MR. ADAIR: 4247 pounds, a decline in pressure, not based upon assumption, but based upon actual pressures found at the subsea datum of the B.T.A. Well, resulting in a decline of pressure of how much? How many pounds, Mr. Millikan?

THE WITNESS: Well, the difference in pressure is 260 pounds.

MR. ADAIR: A decline in pressure of 260 pounds after four months' production.

THE WITNESS: But that is not the decline in pressure, in my opinion, because the decline which we found between our original pressure and the pressure after four months production, was only a difference of 14 pounds, taken at the same level and with the same instrument, which is as close as you can read pressures at a pressure -- that is, as close as the instrument can be read.

Q (By Mr. Adair) Now, my next question, to go on, Mr. Millikan, either you or anyone who knows, Mr. Kellough, can answer. To save time, I don't want to have to read the application of Amerada here. Will one of you tell me whether or not your application for this hearing made any request for definite 80-acre units such as you have asked for today, based upon the east and west 80s of a 160-acre tract?

MR. KELLOUGH: The application speaks for itself and the testimony is all in.

MR. ADAIR: I was trying to save time. I guess I'll have to read it.

GOV. MABRY: Somebody can tell us that. Your testimony is in. What did you show?

MR. McCORMICK: The application speaks for itself.

GOV. MABRY: True enough, and we'll get into that if you don't know.

MR. ADAIR: That's perfectly all right.

MR. KELLOUGH: The application asked for 80-acre proration units, and we did not, in the application, recite the description of the particular units, but we did describe the location of the wells which we were asking, or requesting the

hearing on.

MR. ADAIR: That answers my question perfectly. Thank you.

Q (By Mr. Adair) Now, Mr. Millikan, will you refer to the T.P. Exhibit on the far left over there, No. "C"? If you will refer to the T.P. lease shown here in yellow, which is shown on this map as being T.P. Lease, NO. 211, being the E½NW¼ and the NW¼NE¼ of Section 2, 12 South, 33 East, you will see from that Exhibit that that is all one lease, will you not?

A That is the way you show it on the map.

Q Well, assuming that to be true, Mr. Millikan, based upon your application as originally filed, is there any reason why T.P. cannot form its 80-acre unit out of these two quarter sections of 240-acre tracts, which would be the NE¼NW¼ and the NW¼NE¼ of said Section 2?

A Is there any reason why that can't be done?

Q Yes.

A I don't know of any.

Q Still, here you come in today with your Exhibit "C", Amerada Exhibit "C", or your map, and request that -- first let me say the testimony shows, if the Commission please, a well now being drilled by T.P. at this point, which is now 4,000 feet deep, or more; and your application here -- and what I'm getting at is that you have stated in your testimony that you thought this was fair from the standpoint of correlative rights to the operators. You have requested that the T.P. take in Amerada, which owns this lease, the NE¼NE¼ -- as a partner, and form an 80-acre unit, taking the 40 acres off of the 120 acres which we had there, together, and form with Amerada an 80-acre unit as shown by our dotted lines here on Amerada Exhibit No. 1.

A That was our recommendation. We did not say it was a request. That was our recommendation only.

MR. ADAIR: The notice of this hearing, if the Commission please, if I may so state, which did not, in my opinion, encompass a pooling or a unitization hearing; and the result of the adoption -- the result of such a proceeding by Amerada here, if adopted, would be the first step for such a request for unitization. We have conformed, if the Commission please, in drilling of this well, to the proposed pattern. At the time we started the well, we had no idea at all that they would ask for east 80s and west 80s of quarter sections. We have 80 acres up there.

MR. McCORMICK: Mr. Adair, the application asks only for 80-acre spacing, and this tendered Exhibit here, No. 1, I believe, merely suggested a pattern; and the Commission, if it should adopt 80-acre spacing, could adopt that pattern, or any other pattern it wanted to work out.

MR. ADAIR: I'm just pointing out the Amerada proposal that they proposed for the pattern to be formed as shown on the Exhibit, which would require unitization.

MR. McCORMICK: That's right.

Q (By Mr. Adair) Mr. Millikan, if I may direct your attention here to the Texas-Pacific Exhibit No. "3" --

A (Interrupting) As superimposed on Exhibit "B"?

Q Yes, sir. Referring here again to Texas-Pacific well C.S. 1, which is now drilling, and Amerada's 40-acre tract immediately to the east, would you say that, assuming this contour map to be correct, would you say there was as much oil under the Amerada 40-acre tract as there is under the Texas-Pacific 40-acre tract?

A I don't know. If you want to make some point of that, why, I'll take either side of it.

Q I am not referring to taking some point of it, Mr. Millikan; I may ask you a question. Assuming the contour lines are correct, would you say or wouldn't you say there was less oil under the Amerada tract than there would be under the T.P. tract?

A Well, I think the point you make, Mr. Adair, that you --

Q (Interrupting) Well, can you answer the question, Mr. Millikan?

A No, I can't answer directly; but I would say there is a possibility there may be less.

Q Thank you.

MR. ADAIR: That's all.

A (Continuing) Is that all that you wanted? But there, that same thing might apply to any other set of contours that may be assumed or eventually proven in regard to that lease or any other lease in the field, the same as it exists in any other field in New Mexico, or in any other part of the country.

Q That's right. Well, while we are talking of fields in other parts of the country, other than the B. T. A. or the Hightower area, other than the Crossroads area and other than the Jones Ranch Field that you mentioned in Texas, do you know of any other Devonian field in New Mexico or Texas that has been developed on 80 acres fixed-pattern spacing?

A No, I don't have knowledge -- I don't know of any others, but I think probably there are others that would be just as well off had they been developed on 80-acre spacing. The mere fact that they have been developed on 40-acre spacing is not prima facie evidence that they may not have been developed with

equal equity on 80-acre spacing; nor does it also prove that they might not have done better had they drilled on 10-acre spacing.

MR. ADAIR: Thank you, sir. That's all.

MR. KELLOUGH: That's all.

MR. McCORMICK: Any other rebuttal witnesses?

MR. KELLOUGH: No.

MR. McCORMICK: Does counsel wish to make a summation?

MR. ADAIR: Texas-Pacific does, yes, sir.

MR. KELLOUGH: Yes, I think so.

MR. McCORMICK: Do you want a slight recess to prepare?

GOV. MABRY: Take a four or five-minute recess if you want to.

(Whereupon, at 4:30 o'clock, P.M., a recess was taken, the hearing being adjourned following statements by counsel).

WEDNESDAY

MARCH						
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29

MAR. 1950

IN THE DISTRICT COURT OF LEA COUNTY

STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF)
AMERADA PETROLEUM CORPORATION FOR)
REVIEW AND ACTUAL OF PROCEEDING)
BEFORE THE OIL CONSERVATION) Case No. _____
COMMISSION OF THE STATE OF NEW MEXICO,)
IN CASE NO. 191)

ANSWER OF THE CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO
TO PETITION FOR REVIEW

Comes now the Oil Conservation Commission of the State of New Mexico, and for its answer to the Petition for Review filed herein by Amerada Petroleum Corporation, states:

1. The Commission admits Paragraph 1.

2. The Commission admits that a hearing was held on 20 December, 1949, as alleged in Paragraph 2 and admits that at such hearing the petitioner established by a clear preponderance of the evidence, the facts alleged in sub-paragraphs 2-a and 2-b. The Commission denies that at such hearing the petitioner established by any evidence the facts alleged in the remainder of Paragraph 2.

3. The Commission admits Paragraph 3.

4. The Commission admits Paragraph 4.

5. The Commission admits Paragraph 5.

6. The Commission admits that petitioner is relying on the matters alleged in Paragraph 6, but denies that the Commission erred, as alleged in sub-paragraph 6-a and 6-b, or that the orders entered by the Commission were contrary to the evidence and the law, as alleged in sub-paragraphs 6-c and 6-d.

7. The Commission reserves the right to file herein and to make a part of this answer a transcript of the proceedings had in case No. 191 before the Commission.

WHEREFORE, it is prayed that the petitioner take nothing by its Petition for Review and that the court enter its judgment herein affirming the orders of the Commission.

Joe L. Martinez
Attorney General

Phillip Mulcahy
Assistant Attorney General

Don G. McCormick
Special Assistant Attorney General

George L. Graham
Special Assistant Attorney General

ATTORNEYS FOR OIL CONSERVATION COMMISSION OF NEW MEXICO.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that true copies of the foregoing Answer were served as follows:

Hervey, Dow & Hinkle
Roswell, New Mexico

Seth and Montgomery
Santa Fe, New Mexico

Booth Kellough
c/o Amerada Petroleum Corporation
Tulsa, Oklahoma

all of whom are attorneys for petitioner, and

Atwood, Malone & Campbell
Roswell, New Mexico

attorneys for Texas-Pacific Coal and Oil Company, and that such service was made by ordinary mail addressed to the above named on March 28, 1950.

IN THE DISTRICT COURT OF LEA COUNTY

STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF ARKANSAS [illegible] FOR A WRIT OF PROHIBITION AND/OR WRIT OF CERTIORARI TO THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO, IN CASE NO. 191	No. 8485

ANSWER OF TEXAS PACIFIC COAL AND OIL COMPANY

Comes now Texas Pacific Coal and Oil Company and for its answer to the Petition for Review, states:

First Defense

1. Answering Paragraph 2, it denies that Petitioner established by a clear preponderance of the evidence the matters alleged in Sub-paragraphs (c) through (i) inclusive.

2. Answering Paragraphs 6(a), 6(b) and 6(c), it denies that the Commission erred in any of the respects therein alleged.

3. Answering Paragraph 6(d), it specifically denies that the Orders of the Commission, referred to therein, are contrary to law, and further answering said Paragraph, it states that said allegation of error is so general in nature that it is unavailing to Petitioner.

Second Defense

1. Order R-2 of the Oil Conservation Commission of New Mexico, in Case #191, was supported by substantial evidence, was not arbitrary, capricious or unreasonable, and constituted a valid exercise of the powers of the Commission.

WHEREFORE, Texas Pacific Coal and Oil Company respectfully prays that the Order of the Commission entered

herein be affirmed; that the appeal be dismissed; that it recover its costs herein expended, and for such other and further relief as to the Court may seem proper.

s/Eugene T. Adair
Eugene T. Adair
Fort Worth, Texas

ATWOOD, MALONE & CAMPBELL

s/By: Jack M. Campbell
Roswell, New Mexico

Attorneys for Texas Pacific Coal and Oil Company.

CERTIFICATE

Jack M. Campbell, being one of the attorneys for Texas Pacific Coal and Oil Company, hereby certifies that on March 24, 1950 he caused a copy of the foregoing Separate Answer of Texas Pacific Coal and Oil Company to be mailed to Hervey, Dow & Hinkle, Roswell, New Mexico, Seth & Montgomery, Santa Fe New Mexico, Harry D. Page, Tulsa, Oklahoma and Booth Killough, Tulsa, Oklahoma, all attorneys for Petitioner.

s/Jack M. Campbell
Jack M. Campbell

October 4, 1950

Mr. Booth Kellough
Amerada Petroleum Corporation
Drawer 2040
Tulsa, Oklahoma

Dear Mr. Kellough:

I recently had a conversation with Mr. Clarence Hinkle, at which time he said that Amerada would bear the expense incurred by the Commission in preparing the additional copies of the record taken. At that time I told Mr. Hinkle that the Commission would bear the expense of the copies.

It appears, however, that there may be more of the Commission's cases taken to court and the expense is one item of budget for which we cannot be prepared.

We have two vouchers which we have already paid, in the amounts of $134.43 and $732.00, a total of $866.43. If it is not an inconvenience to you and your company, we should appreciate it very much if you could assume the responsibility to the Commission for payment of the above amount.

We feel that this case is establishing a precedent and future cases might become quite expensive.

Thanking you for your consideration of this matter, we are

Very truly yours,

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. Spurrier
Secretary-Director

RRS:bw
cc: Mr. Clarence Hinkle

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

September 11, 1950

COPY

Judge George T. Harris
Judge of Fifth Judicial Court
Roswell, New Mexico

Dear Judge Harris:

The matter of dismissal, with or without prejudice, in the Amerada Bagley controversy has been discussed between Commissioner Shepard and myself. We feel it is of no consequence to the Commission whether the case be dismissed with or without prejudice since spacing cannot be a matter of prejudice but is a matter of various reservoir conditions,

Respectfully,

PRS:bpw

Secretary and Director

CLASS OF SERVICE DESIRED			
DOMESTIC		CABLE	
TELEGRAM		ORDINARY	
DAY LETTER		URGENT RATE	
SERVICE		DEFERRED	
NIGHT LETTER		NIGHT LETTER	

Patrons should check class of service desired; otherwise the message will be transmitted as a telegram or ordinary cablegram.

WESTERN UNION

1201

A. N. WILLIAMS
PRESIDENT

$	CHECK
S	ACCOUNTING INFORMATION
F	TIME FILED

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

SEPTEMBER 11 19 50

To JUDGE GEORGE T. HARRIS

Care of or Apt. No. FIFTH JUDICIAL DISTRICT

Street and No. ROSWELL, NEW MEXICO

Case 141

FOR VICTORY BUY WAR BONDS TODAY

Place

LEAVING SANTA FE TO REPRESENT OIL COMMISSION AT PRETRIAL CONFERENCE. ASK YOUR INDULGENCE IF FEW MINUTES LATE FOR 1:30 P. M. SETTING.

GEORGE A. GRAHAM

OIL CONSERVATION COMMISSION.

Sender's name and address
(For reference only)

Sender's telephone number

GEORGE L. REESE, JR.
DON G. McCORMICK
S. M. RUTHERFORD, III

REESE AND McCORMICK
ATTORNEYS AT LAW
BUJAC BUILDING
CARLSBAD, NEW MEXICO

September 9, 1950

Honorable George T. Harris
District Judge
Roswell, New Mexico

Re: Amerada Petroleum Corporation,
Case No. 8485, District Court
of Lea County.

Dear Judge Harris:

I have received notice that the pre-trial conference in the above case will be resumed at Roswell on 11 September, 1950, at 1:30 p.m. I had planned to attend this hearing, but it now develops a meeting of the Eddy County Bar Association has been called for Noon of that same day in Carlsbad. I happen to be president of this association, and the meeting is important in that we are now making the final plans for the annual meeting of the State Bar of New Mexico. Therefore, I regret that I shall be unable to attend.

I have been informed by both Mr. Hinkle and Mr. Campbell that Amerada Petroleum Corporation will move to dismiss this matter without prejudice, and that the intervener, Texas Pacific Coal & Oil Company, will resist this motion and urge that any dismissal should be with prejudice.

I have given this matter some thought and have read a little law on the subject. Under the state of the record, it does not appear to me that it is of great importance to the Oil Conservation Commission which course is taken. You will recall that the order of the Comaission which is being reviewed merely held that there was insufficient evidence to justify the establishing of eighty acre proration units in the Bagley-Siluro-Devonia Pool. Therefore, if the case were dismissed with prejudice, it would merely mean that Amerada was bound by the decision, that as of 20 December, 1949, the date of the hearing before the Commission, there was insufficient evidence to justify

the spacing order which was sought. On the other hand, if the case were dismissed without prejudice, the question of whether or not there was sufficient evidence on 20 December, 1949, would not be res adjudicata.

In the event Amerada should later file another petition seeking an eighty acre spacing order, the Commission would be bound to determine all new evidence based on facts developed since 20 December, 1949. In order to do this, they would necessarily have to consider the facts which had been developed up to 20 December, 1949, in order to correlate all the pertinent facts. The law specifically allows Amerada to file a new petition based on changed conditions. Therefore, I do not see that it will make any difference, one way or the other, as to whether the case is dismissed with or without prejudice.

I recognize that counsel for Texas Pacific Coal & Oil Company have borne the brunt of the work in this case, and I trust you will give due consideration to the views of those attorneys. I am merely expressing my own views as attorney for the Oil Conservation Commission and do not desire to prejudice the position of Texas Pacific Coal & Oil Company.

Very truly yours,

Don G. McCormick

CC: Hon. Jack M. Campbell
Attorney at Law
J. P. White Building
Roswell, New Mexico

Hon. Clarence E. Hinkle
Attorney at Law
J. P. White Building
Roswell, New Mexico

Mr. R. R. Spurrier
State Geologist
Santa Fe, New Mexico

DGM:mjt

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191

CASE NO. 8485

THE STATE OF NEW MEXICO
TO: THOMAS J. MABRY, Chairman,
GUY SHEPARD, Member, and
R. R. SPURRIER, Secretary,
of the Oil Conservation Commission
of the State of New Mexico;
TEXAS PACIFIC COAL AND OIL COMPANY,
a foreign corporation,

GREETINGS:

NOTICE

You are hereby commanded to appear, in your official capacity designated above, before the District Court of the Fifth Judicial District of the State of New Mexico, Division No. 2, sitting within and for the County of Lea at Lovington, New Mexico, that being the county and place in which the petition for review herein is filed, within thirty (30) days after service of this notice, then and there to answer the petition for review of the Amerada Petroleum Corporation, Petitioner in the above cause.

You are notified that unless you so appear and answer, the petitioner, Amerada Petroleum Corporation, will appeal to the court for the relief demanded in its petition for review, which is marked "Exhibit A", attached hereto and made a part hereof to the same extent as if set out in this notice.

WITNESS the Honorable G. T. Harris, District Judge of the said Fifth Judicial District Court, Division No. 2, of the State of New Mexico, and the seal of the District Court of Lea County, New Mexico, Division No. 2, this 31st day of MARCH, 1950

(SEAL)

W. M. Beauchamp
W. M. Beauchamp, Clerk of the said District Court.

By _____ Deputy

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO, IN CASE NO. 191

Case No. 8485

PETITION FOR REVIEW

Comes, now Amerada Petroleum Corporation, and for its petition for the review of the action of the Oil Conservation Commission of the State of New Mexico in the proceeding referred to above, alleges and states:

1. That on July 29, 1949, Petitioner filed its application with the Oil Conservation Commission of the State of New Mexico for the establishment of eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, and for the uniform spacing of wells in said pool, which application was given Case No. 191 by the Commission.

2. Petitioner further states that due notice having been given said application came on for hearing before the Oil Conservation Commission of the State of New Mexico on December 20, 1949, at which hearing Petitioner introduced evidence in support of its application, establishing by a clear preponderance thereof the following facts which Petitioner hereby realleges, to wit:

(a) That on July 26, 1949, Petitioner completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2, Township 12 South, Range 33 East, Lea County, New Mexico, which said well discovered a new common source of supply known as the Bagley Siluro-Devonian Pool, found at the approximate depth of 10,790 feet to 10,980 feet.

"EXHIBIT A"

(b) That the probable productive limits of said Bagley Siluro-Devonian Pool is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in T11S-R33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in T12S-R33E
Lea County, New Mexico

(c) That one well in said pool will adequately, efficiently and economically drain an area of at least eighty acres and that to require the drilling of more than one well to eighty acres in said pool will result in the drilling of unnecessary wells and will require Petitioner to drill more wells than are reasonably necessary to secure its proportionate part of the production from said pool.

(d) That because of the effective drainage area of each well in said pool, the great depth thereof and the high cost and expense required in the drilling and completion of said wells, proration units of eighty acres or one-half of a governmental quarter section should be established.

(e) That to protect the correlative rights of all parties hereto and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the unit should be formed by dividing each governmental quarter section by a line from north to south through the center thereof, so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 & NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 & NE/4 SE/4 Sec. 2-12S-33E
S/2 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

(f) That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to protect the

correlative rights of all parties interested therein, all wells drilled into said common source of supply should be located in the center of the northwest and southeast quarters of each governmental quarter section with a tolerance of 150 feet in any direction to avoid surface obstructions.

(g) That the order of the Commission should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well as above described is now producing, known as the Bagley Siluro-Devonian Pool, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in the common source of supply.

(h) That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, should be the proportional factor of 4.67 times the top allowable until such time as the development of said pool, based upon evidence submitted to the Commission after notice and hearing, justifies an increase in allowable without injury to the reservoir, and that the Commission should retain jurisdiction to increase said allowable if the evidence so justifies.

(i) That in the event good cause is shown for the granting of an exception to the well location pattern proposed by Petitioner such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well should be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

3. Attached hereto marked "Exhibit A" and made a part hereof is a plat showing the location of the Bagley Siluro-Devonian Pool as delineated above, the leasehold ownership, the wells drilled in said pool, the proposed spacing pattern for wells to be drilled in said pool and the proposed location of the proration units constituting an exception to the regular proration units comprising the West Half and the East Half of each governmental quarter section.

4. That thereafter on January 23, 1950, the Oil Conservation Commission entered its Order No. R-2 in Case #191, denying the application of Petitioner, which order is attached hereto marked "Exhibit B" and made a part hereof to the same extent as if set out in full herein.

5. That thereafter on February 6, 1950, Petitioner filed its timely application for rehearing before the Oil Conservation Commission of the State of New Mexico and said application for rehearing was denied by said Commission by Order No. R-8 in Case #191 on February 8, 1950, which said order is attached hereto, marked "Exhibit C" and made a part hereof to the same extent as if set out in full herein.

6. Petitioner further alleges that the grounds of invalidity of the orders of the Commission referred to above, upon which it relies and will rely, are as follows, towit:

(a) That the Commission erred in finding the evidence 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.

(b) That the Commission erred in finding the evidence insufficient to prove that one well drilled on each eighty-acre tract would efficiently drain the recoverable oil from the pool.

(c) That the orders entered by said Commission denying said application and denying the rehearing thereof are contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof the facts and matters alleged above and

that eighty acres is the area that may be efficiently and economically drained and developed by one well and that the establishment of eighty-acre proration units and uniform spacing of wells as requested by Petitioner will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

(d) That the orders of the Commission referred to above are contrary to law.

Petitioner further alleges that all of the matters and questions herein presented were heretofore presented to the Commission by the Application for Rehearing.

WHEREFORE, Petitioner respectfully prays the Court, as authorized by Section 19b, Chapter 168 of the Laws of the State of New Mexico, 1949, to review the action of the Oil Conservation Commission herein complained of and to enter its order vacating the orders of the Commission hereinabove referred to and to enter its order in lieu thereof establishing eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application of Amerada Petroleum Corporation filed with said Commission and in accordance with the evidence presented at the hearing before said Commission in support thereof as set out above and the evidence presented upon the trial de novo upon appeal, all as authorized by the laws of the State of New Mexico.

HERVEY, DOW & HINKLE

s/ By Clarence Hinkle

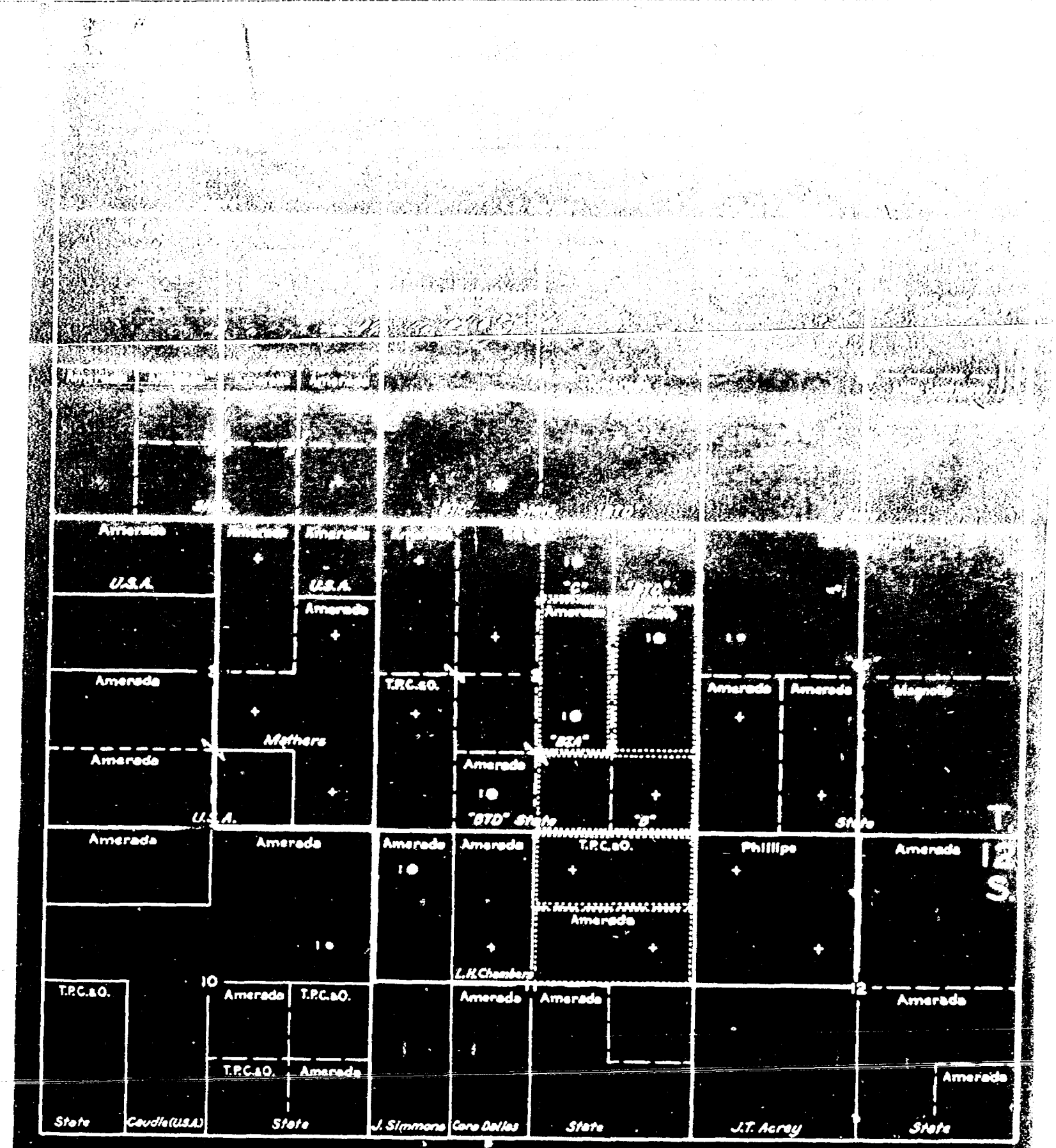
SETH & MONTGOMERY

s/ By Oliver Seth

s/ Harry D. Page

s/ Booth Kellough

Attorneys for Petitioner
Amerada Petroleum Corporation.



R.33 E.

BAGLEY FIELD

LEA COUNTY NEW MEXICO

● BAGLEY - SILURO-DEVONIAN POOL WELLS
• BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION
DECEMBER 20, 1949

"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. 191
ORDER NO. R-1

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
Signed by:
Thomas J. Mabry, Chairman
Guy Shepard, Member
R. R. Spurrier, Secretary

"EXHIBIT B"

BERORE 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 C"

@? 2/21/50 B[redacted]10)

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO IN CASE NO. 191.

CASE NO. 8485

THE STATE OF NEW MEXICO
TO: THOMAS J. MABRY, Chairman,
GUY SHEPARD, Member, and
R.R. SPURRIER, Secretary,
of the Oil Conservation Commission
of the State of New Mexico;
TEXAS PACIFIC COAL AND OIL COMPANY,
a foreign corporation,

GREETINGS:

NOTICE

You are hereby commandéd to appear, in your official capacity designated above, before the District Court of the Fifth Judicial District of the State of New Mexico, Division No. 2, sitting within and for the County of Lea at Lovington, New Mexico, that being the county and place in which the petition for review herein is filed, within thirty (30) days after service of this notice, then and there to answer the petition for review of the Amerada Petroleum Corporation, Petitioner in the above cause.

You are notified that unless you so appear and answer, the Petitioner, Amerada Petroleum Corporation, will appeal to the court for the relief demanded in its petition for review, which is marked "Exhibit A", attached hereto and made a part hereof to the same extent as if set out in this notice.

WITNESS the Honorable G.T. Harris, District Judge of the said Fifth Judicial District Court, Division No. 2, of the State of New Mexico, and the seal of the District Court of Lea County, New Mexico, Division No. 2, this 23rd day of February, 1950.

W. M. Beauchamp
W.M. Beauchamp, Clerk of the said District Court.

(Seal)

By _____ Deputy

STATE OF NEW MEXICO)
) SS
COUNTY OF _____)

I, _____, Sheriff of _____County, New Mexico, do hereby certify that this within notice came to hand the ____ day of February, 1950, and there were at the same time delivered to me for service herewith true copies of this notice and of the petition for review filed in the within cause; and that I made service herein by delivering one copy of this notice and one copy of the said petition for review herein to each of the within named persons within the said County of _____, as follows, to wit:

1. THOMAS J. MABRY, by delivering the same to

_____

_____

on February ____, 1950.

2. GUY SHEPARD, by delivering the same to

_____

_____

on February ____, 1950.

3. R. R. SPURRIER, by delivering the same to

_____

_____

on February ____, 1950.

4. Texas Pacific Coal and Oil Company, a foreign corporation, by serving

_____

its Service Agent for the State of New Mexico, by delivering the same to

_____

_____

on February ____, 1950.

BK:P 2/21/50 (10)

IN THE DISTRICT COURT OF LEA COUNTY, NEW MEXICO

IN THE MATTER OF THE PETITION OF AMERADA PETROLEUM CORPORATION FOR REVIEW AND APPEAL OF PROCEEDING BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO, IN CASE NO. 191	Case No. _____

PETITION FOR REVIEW

Comes, now Amerada Petroleum Corporation, and for its petition for the review of the action of the Oil Conservation Commission of the State of New Mexico in the proceeding referred to above, alleges and states:

1. That on July 29, 1949, Petitioner filed its application with the Oil Conservation Commission of the State of New Mexico for the establishment of eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, and for the uniform spacing of wells in said pool, which application was given Case No. 191 by the Commission.

2. Petitioner further states that due notice having been given said application came on for hearing before the Oil Conservation Commission of the State of New Mexico on December 20, 1949, at which hearing Petitioner introduced evidence in support of its application, establishing by a clear preponderance thereof the following facts which Petitioner hereby realleges, to wit:

(a) That on July 26, 1949, Petitioner completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2, Township 12 South, Range 33 East, Lea County, New Mexico, which said well discovered a new common source of supply known as the Bagley Siluro-Devonian Pool, found at the approximate depth of 10,790 feet to 10,980 feet.

"EXHIBIT A"

(b) That the probable productive limits of said Bagley Siluro-Devonian Pool is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in T11S-R33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in T12S-R33E
Lea County, New Mexico

(c) That one well in said pool will adequately, efficiently and economically drain an area of at least eighty acres and that to require the drilling of more than one well to eighty acres in said pool will result in the drilling of unnecessary wells and will require Petitioner to drill more wells than are reasonably necessary to secure its proportionate part of the production from said pool.

(d) That because of the effective drainage area of each well in said pool, the great depth thereof and the high cost and expense required in the drilling and completion of said wells, proration units of eighty acres or one-half of a governmental quarter section should be established.

(e) That to protect the correlative rights of all parties hereto and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the unit should be formed by dividing each governmental quarter section by a line from north to south through the center thereof, so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 & NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 & NE/4 SE/4 Sec. 2-12S-33E
S/2 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

(f) That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to

protect the correlative rights of all parties interested therein, all wells drilled into said common source of supply should be located in the center of the northwest and southeast quarters of each governmental quarter section with a tolerance of 150 feet in any direction to avoid surface obstructions.

(g) That the order of the Commission should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well as above described is now producing, known as the Bagley Siluro-Devonian Pool, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in the common source of supply.

(h) That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, should be the proportional factor of 4.67 times the top allowable until such time as the development of said pool, based upon evidence submitted to the Commission after notice and hearing, justifies an increase in allowable without injury to the reservoir, and that the Commission should retain jurisdiction to increase said allowable if the evidence so justifies.

(i) That in the event good cause is shown for the granting of an exception to the well location pattern proposed by Petitioner such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well should be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

3. Attached hereto marked "Exhibit A" and made a part hereof is a plat showing the location of the Bagley Siluro-Devonian Pool as delineated above, the leasehold ownership, the wells drilled in said pool, the proposed spacing pattern for wells to be drilled in said pool and the proposed location of the proration units constituting an exception to the regular proration units comprising the West Half and the East Half of each governmental quarter section.

4. That thereafter on January 23, 1950, the Oil Conservation Commission entered its Order No. R-2 in Case #191, denying the application of Petitioner, which order is attached hereto marked "Exhibit B" and made a part hereof to the same extent as if set out in full herein.

5. That thereafter on February 6, 1950, Petitioner filed its timely application for rehearing before the Oil Conservation Commission of the State of New Mexico and said application for rehearing was denied by said Commission by Order No. R-8 in Case #191 on February 8, 1950, which said order is attached hereto, marked "Exhibit C" and made a part hereof to the same extent as if set out in full herein.

6. Petitioner further alleges that the grounds of invalidity of the orders of the Commission referred to above, upon which it relies and will rely, are as follows, to wit:

(a) That the Commission erred in finding the evidence 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.

(b) That the Commission erred in finding the evidence insufficient to prove that one well drilled on each eighty-acre tract would efficiently drain the recoverable oil from the pool.

(c) That the orders entered by said Commission denying said application and denying the rehearing thereof are contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof the facts and matters alleged above and that eighty acres is the area that may be efficiently and economically drained and developed by one well and that the establishment of eighty-acre proration units and uniform spacing of wells as requested by Petitioner will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

(d) That the orders of the Commission referred to above are contrary to law.

Petitioner further alleges that all of the matters and questions herein presented were heretofore presented to the Commission by the Application for Rehearing.

WHEREFORE, Petitioner respectfully prays the Court, as authorized by Section 19b, Chapter 168 of the Laws of the State of New Mexico, 1949, to review the action of the Oil Conservation Commission herein complained of and to enter its order vacating the orders of the Commission hereinabove referred to and to enter its order in lieu thereof establishing eighty-acre proration units and the uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, as requested by the application of Amerada Petroleum Corporation filed with said Commission and in accordance with the evidence presented at the hearing before said Commission in support thereof as set out above and the evidence presented upon the trial de novo upon appeal, all as authorized by the laws of the State of New Mexico.

HERVEY, DOW & HINKLE

s/ By Clarence Hinkle

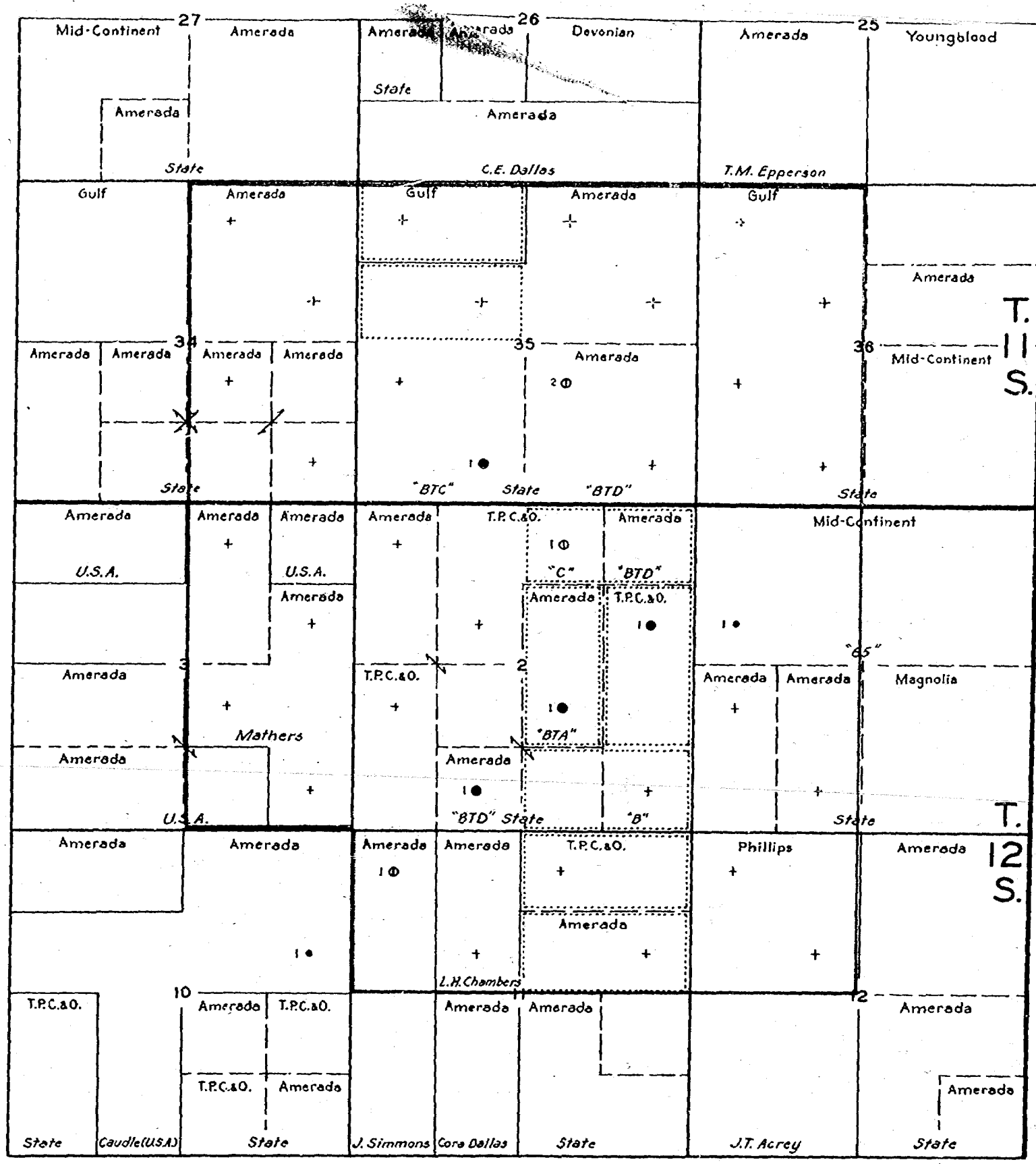
SETH & MONTGOMERY

s/ By Oliver Seth

s/ Harry D. Page
Harry D. Page

s/ Booth Kellough
Booth Kellough

Attorneys for Petitioner
Amerada Petroleum Corporation.



R.33 E.

BAGLEY FIELD

LEA COUNTY NEW MEXICO

● BAGLEY - SILURO-DEVONIAN POOL WELLS
• BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION
DECEMBER 20, 1949

"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. 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
Signed by:
Thomas J. Mabry, Chairman
Guy Shepard, Member
R. R. Spurrier, Secretary

"EXHIBIT B"

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.

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 C"

NEW MEXICO
OIL CONSERVATION COMMISSION

GOVERNOR THOMAS J. MABRY
CHAIRMAN
LAND COMMISSIONER GUY SHEPARD
MEMBER
STATE GEOLOGIST R. R. SPURRIER
SECRETARY AND DIRECTOR

P. O. BOX 871
SANTA FE, NEW MEXICO

June 1, 1950

MEMORANDUM TO MR. SPURRIER:

In accordance with your instructions, I made the trip to Roswell for the purpose of attending the pre-trial conference in the Amerada matter.

The conference began at 9:00 A.M., May 29. After a 3-hour discussion, the point raised by Mr. Jack Campbell and supported by Mr. McCormick and myself to the effect that the trial de novo phraseology in the act was unconstitutional, was met by Amerada attorneys Mr. Kellough and Mr. Hinkle, with a request for a 30-day recess of the pre-trial conference within which time they wished to file briefs on the question. This office and the Texas Pacific Coal people will be allowed 10 days thereafter to file answer briefs, thus the pre-trial conference is in recess for at least 40 days.

George A. Graham

GAG:bw

COPY

ATWOOD, MALONE & CAMPBELL
LAWYERS

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

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

January 9, 1950

Mr. R. R. Spurrier
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Re: Case No. 191

Dear Mr. Spurrier:

In compliance with the request of the Commission made at the conclusion of the hearing upon Case No. 191, we are enclosing herewith requested Findings of Fact and Conclusions of Law of protestant, Texas Pacific Coal and Oil Company, for filing in connection with this case. A copy of the requested findings is being forwarded to other members of the Commission.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

Jack M. Campbell

By: Jack M. Campbell

JMC:bk

cc: Mr. Guy Shepherd
Commissioner of Public Lands

Honorable Thomas J. Mabry
Governor of the State of New Mexico

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

In the matter of the application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼ Section 2, Twp. 12 S., Rge. 33 E., N.M.P.M., in Lea County, New Mexico.

Case No. 191

REQUESTED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF PROTESTANT TEXAS PACIFIC COAL AND OIL COMPANY

Comes now protestant Texas Pacific Coal and Oil Company by its attorneys and requests the Commission to adopt the following Findings of Fact and Conclusions of Law.

Findings of Fact

1. The lease owners in the Bagley Devonian pool here involved have not all agreed upon a plan for the spacing of wells.

2. None of the royalty owners, overriding royalty owners, or owners of production payments have agreed upon the plan proposed by applicant for spacing of wells in the pool here involved.

3. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant would have the effect of preventing "waste", as such term is defined by Senate Bill No. 163, Acts of the 19th Legislature, State of New Mexico, 1949.

4. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant is fair to the royalty owners in such pool.

5. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon the 80 acre fixed pattern spacing plan proposed by applicant would adequately and efficiently drain the recoverable oil from the pool reservoir.

6. The lease owners in the pool here involved have not all agreed upon the plan or method of distribution of the allowables, as proposed by applicant hereunder, nor have such lease owners all agreed upon the amount of the allowable per well proposed by applicant herein.

7. None of the royalty owners, overriding royalty owners, or owners of production payments, in the pool here involved, have agreed upon applicant's proposed plan or method of distribution of allowables, nor have such royalty owners agreed upon the per well allowable proposed by applicant.

8. The applicant failed to prove, by a preponderance of the evidence, that its proposed plan or method of distribution of allowables, or its proposed per well allowable, is fair to the royalty owners in such pool.

9. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon a 40 acre spacing pattern, in conformity with the existing Statewide spacing order, would constitute the drilling of unnecessary wells.

10. The applicant failed to prove, by a preponderance of the evidence, that applicant's proposed 80 acre fixed pattern spacing plan would afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil or gas in the pool.

11. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would reduce, or tend to reduce, the total quantity of crude petroleum oil and natural gas ultimately recoverable from the pool here involved.

12. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil and/or gas in the pool here involved.

13. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not properly protect the correlative rights of the lease owners and royalty owners in the pool here involved.

14. Applicant failed to prove, by a preponderance of the evidence, any basis or justification for granting its requested exceptions to the Statewide rules governing spacing of wells and assignment of allowables thereto, in the pool here involved.

Conclusions of Law

1. Granting of the application would result in "waste", as such term is defined in Senate Bill No. 163, Acts of the 19th Legislature of New Mexico, 1949.

2. Granting of the application would not properly protect the correlative rights of the owners in the pool.

3. Applicant's proposed allocation of a 40 acre allowable to an 80 acre proration unit results in unreasonable and discriminatory allocation between oil fields in this State.

4. Granting of the application and the establishment of the 80 acre proration unit and the fixed pattern spacing plan in the pool here involved would violate the provisions of Section 13 (c) of Senate Bill No. 163, Acts of the 19th Legislature, New Mexico, 1949, which provides that the owner of any tract that is smaller than the drilling unit established for the field shall not be deprived of the right to drill on and produce from such tract, if same can be done without waste.

Respectfully submitted,

Eugene T. Adair
Jack M. Campbell
By Jack M. Campbell
Attorneys for Protestant
Texas Pacific Coal and Oil Company

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

ATWOOD, MALONE & CAMPBELL
LAWYERS

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

January 9, 1950

Mr. Don G. McCormick
% Oil Conservation Commission
Santa Fe, New Mexico

Re: Case No. 191

Dear Don:

Enclosed herewith is a copy of the requested Findings of Fact and Conclusions of Law of protestant, Texas Pacific Coal and Oil Company, in connection with Case No. 191.

We have not undertaken to furnish any memorandum brief of the law on matters which might arise under a ruling of the Commission authorizing 80-acre spacing as suggested by attorney for applicant, as we could not see that such a brief would serve any useful purpose at this time. In the event the Commission requires such a brief on any particular point of law, we will be glad, of course, to comply with their request.

We would appreciate a decision on this matter as soon as the Commission can properly do so, in order that development in this field may proceed with a definite understanding between the operators.

With kindest personal regards, I am

Very truly yours,

ATWOOD, MALONE & CAMPBELL

Jack M. Campbell

By: Jack M. Campbell

JMC:bk

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

ATWOOD, MALONE & CAMPBELL

LAWYERS

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

January 9, 1950

Mr. R. R. Spurrier
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Re: Case No. 191

Dear Mr. Spurrier:

In compliance with the request of the Commission made at the conclusion of the hearing upon Case No. 191, we are enclosing herewith requested Findings of Fact and Conclusions of Law of protestant, Texas Pacific Coal and Oil Company, for filing in connection with this case. A copy of the requested findings is being forwarded to other members of the Commission.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

Jack M. Campbell

By: Jack M. Campbell

JMC:bk

cc: Mr. Guy Shepherd
Commissioner of Public Lands

Honorable Thomas J. Mabry
Governor of the State of New Mexico

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
FILE
JAN 11 1950

TEXAS PACIFIC COAL AND OIL COMPANY

GENERAL OFFICES
FORT WORTH 1
TEXAS

EUGENE T. ADAIR
GENERAL COUNSEL

March 13, 1950

Hon. R. R. Spurrier
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Spurrier:

In compliance with the Commission's request, we enclose herewith four complete copies of the Schlumberger log of our State "B" No. 1 Well, in the Bagley Field, Lea County, New Mexico.

We have ordered the copies of the core-graph which you requested, and they will be forwarded to you immediately upon their receipt by us.

Respectfully yours,

Eugene T. Adair

ETA:AW
cc:
Mr. Jack M. Campbell
Atwood, Malone & Campbell
Attorneys At Law
J. P. White Building
Roswell, New Mexico

Case
191

March 8, 1950

Mr. Jack Campbell
Atwood, Malone & Campbell
J. P. White Building
Roswell, New Mexico

Dear Jack:

We would like to order four copies of the Texas-Pacific Coal & Oil Company's Schlumberger State B #1, Bagley Field, Sec. 2-12S-33E, Lea County, New Mexico.

Thanking you, we are

Very truly yours,

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

RRS:hw

R. R. Spurrier
Secretary-Director

March 14, 1950

Mr. Jack Campbell
Atwood, Malone & Campbell
J. P. White Building
Roswell, New Mexico

Dear Mr. Campbell:

Further to our letter of March 3, we are also requesting additional copies of the Schlumberger Log on Texas-Pacific Coal & Oil Company's State B #1 well, Bagley Field, Sec. 2-12S-33E, Lea County, New Mexico.

Thanking you for your attention to this matter, we are

Very truly yours,

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. Spurrier
Secretary-Director

RRS:bw
cc: Texas-Pacific Coal & Oil Co.
Fort Worth, Texas.

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

ATWOOD, MALONE & CAMPBELL
LAWYERS

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

March 10, 1950

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

Dear Dick:

I have your letter of March 8th requesting additional copies of the Schlumberger Log on the Texas Pacific well, and the Fort Worth office has advised me that these will be sent direct to you as soon as they can be prepared.

It occurs to me that March 20th, 21st, or 22nd will be an ideal time for a conference on procedure to be used in this case, in view of the fact that the State wide hearing and the hearing on the Knowles matter are set for March 21st. Gene Adair can be there at that time and I presume the Amerada attorneys will also be there for the Knowles hearing. George indicated that you might be in Oklahoma at that time, and I would appreciate hearing from you as to whether any of these dates would be satisfactory.

George Graham was going to send photostatic copies of Texas Pacific exhibits which I requested to Fort Worth, so that they could prepare some originals for you to certify for the Court record. I presume this has been done, although they had not been received in Fort Worth this morning.

Please be assured that we shall do everything possible to assist in sustaining the Commission's order, and in seeing that this first appealed case is properly handled from a procedural point of view, in order that it will serve as a precedent for cases which may be appealed in the future. I anticipate that with the increased activity in New Mexico, and with the new regulations concerning gas that in not the too distant future appeals to the Court will not seem so unusual to us.

With kindest personal regards, I am

Very truly yours,

Jack

Jack M. Campbell

JMC/s

TEXAS PACIFIC COAL AND OIL COMPANY

GENERAL OFFICES
FORT WORTH 1
TEXAS

EUGENE T. ADAIR
GENERAL COUNSEL

March 24, 1950

MAR 1950

Hon. R. R. Spurrier, Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Dick:

I am today mailing under separate cover a complete set of the plats and maps introduced by our Company at the Bagley hearing. It is my understanding that these plats and maps will be used in the preparation of certified copies which will be made a part of the transcript in this case on appeal.

I assume that the Commission already has had prepared photostatic copies of the oil and gas leases and other documentary evidence introduced and, therefore, we have made no effort to further reproduce those exhibits. However, as above stated, we are sending a complete set of all maps, cross-sections and other charts introduced, which have been reproduced in their original colors.

With kind personal regards.

Yours very truly,

gene

ETA:AW

March 7, 1950

Texas Pacific Coal & Oil Company
Box 2110
Fort Worth, Texas

Gentlemen:

This office would like to obtain five or six copies of the coregraph prepared by the Rotary Engineering and Manufacturing Company, Inc. on the following:

Company:	Texas Pacific Coal & Oil Co.
Well:	State B-1
Field:	Bagley Siluro-Devonian
County:	Lea
State:	New Mexico
Depth:	From 10824 to 10914
Date:	11-20-49.

We would appreciate receiving the copies of this coregraph, at your earliest convenience.

Very truly yours,

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. Spurrier
Secretary-Director

RRS:bw

map.

Texas & Pacific

farm out agreement

A	ok 6 copies	1 copy Map
B	ok / copy each	3 leases (photostats)
C	ok / "	lease ownership
D	mineral fee ownership	/
E	Contour Pattern - Top Gloreta (Seat)	/
F	Contour - Top Pennsylvanian	/
G	Contour - Top Devonian & Base of black shale	/
H	Schlumberger - St. B #1	/
I	?	
J	?	
K	~~ok / copy~~	
L	" " "	Core graph -
M	ok / "	Core
N	ok / "	"
O	Contour Map Devonian (Ordovician) - Top of	/ copy
P	ok / copy	well cross sections
Q	ok / copy	General cross sec

"a"

Amerada

1	Reentire Map of Pageyard	2 copies
2	ok 2 copies	Schlum BTF #1
3	" / "	Schlum. BTC #1 (1 Copy)
4	" / " "	BTD #1 (1 Copy)

April 27, 1959

Mr. Jack Campbell
Atwood, Malone and Campbell
Roswell, New Mexico

RE: Exhibits in Case No. 191

Dear Mr. Campbell:

We have been arranging the exhibits in this case and find a few discrepancies we would like to discuss with you.

Zonne-Pacific Coal & Oil Company

A. Photostatic copy of letter (1 copy)

B. Photostatic copies of three leases (1 copy each). These are marked "H" "G" and "J"

There is also a map marked Exhibit "H" which probably represents the drainage area of the State #1 No. 1. This is the map on which Mr. Christie drew the circle

C. Lease ownership plat

D. Mineral fee ownership plat

E. Top of Gloriota - contour map

F. Contour map - Top Pennsylvanian

G. Contour map - Top [illegible]

H. Schlumberger log - FF C20, State #1 (This was marked "H" and should be "G")

I. How many of these should we have? I think only one marked "B" which takes in
J. the intervals 10% - 30% and 10,33% - 30%.
K.

L. Core graph, mentioned above.

M. Dense core - 10,[illegible]% - 30

N. Prof. core

O. Overlay contour map - Top Devonian

P. Cross section from [illegible] to [illegible]

Q. General Cross section

Appendix

1. Outlined area of Bagley, reservoir; required or designated spacing

2. Schlumberger of [illegible]

3. Schlumberger of [illegible]

4. Schlumberger of [illegible]

There are just a few differences, but we would like to straighten them out so the exhibits will be in good order. Thanks very much.

Very truly yours,

bpw

Secretary and Director

cc

COPY

ATWOOD, MALONE & CAMPBELL
LAWYERS

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

J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

May 23, 1950

Mr. George Graham,
Commissioner Public Lands
Santa Fe, New Mexico

Dear George:

As you know, the pretrial conference on the Amerada appeal is set for May 29 at 9 o'clock A.M. in the District Court of Roswell. We presume you will be here and that you will have with you the complete transcript of proceedings before the commission.

Very truly yours,

ATWOOD, MALONE & CAMPBELL

By

JMC:hl

cc: Mr. R. R. Spurrier,
Director of Oil Conservation Commission
Santa Fe, New Mexico

Transcript of Exhibits 12-20-47

1 entitled area of Logging, on which are located
recommended Required or designated spacing

2 Schlumberger BTA

? 3 Sohl BTC

? 4 Sohl BTD

A letter - farmout agreement

B photostatic copies of 3 logs
(logs marked H I J) & map marked
Ex "B" to accompany 3 logs? see p. 11
drainage area of BTD

C lease ownership plat 827
824
13

D mineral fee ownership plat 874

E Top of Glorieta - contour map

F Top Penn - contour maps

G Top Dev. "

H Schl. TP 640, State B1

I what are they

J "

K "

L case papers

M Areas cont. - 824 / 830 Layers 1% cont. at 2.4%

N Prod. cons. - for 6% perm 12 mcf

O overlay contour map - TD cont.

P Cross section for SW to NE

Q General Cross section

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

W. P. MARSHALL, PRESIDENT

INTERNATIONAL SERVICE
Check the class of service desired; otherwise this message will be sent at the full rate

FULL RATE		DEFERRED	
CODE		NIGHT LETTER	

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

SANTA FE, NEW MEXICO
MARCH 1, 1950

MR. JACK M. CAMPBELL
ATWOOD, MALONE AND CAMPBELL
J. P. WHITE BUILDING
ROSWELL, NEW MEXICO

PLEASE CONTACT HINKLE AND OTHERS FOR MEETING MY OFFICE TUESDAY

MARCH 7, 1000 ON CASE 191.

OIL CONSERVATION COMMISSION/SPURRIER

STRAIGHT WIRE

EXHIBITS
Case No. 191

Texas-Pacific Coal & Oil Company

✓A.	Photostatic copy of letter	1 copy
✓B.	Photostatic copies of three leases	1 copy each
✓C.	Lease Ownership Plat	1 copy
✓D.	Mineral Fee Ownership Plat	1 copy
✓E.	Contour Datum - Top Glorieta	1 copy
✓F.	Contour - Top Pennsylvanian	1 copy
✓G.	Contour - Top Devonian to base of black shale	1 copy
✓H.	Schlumberger - St. B #1	1 copy
I.		
J.		
K.		
L.	Core graph	1 copy
M.	Core	1
N.	Core	1
O.	Overlay Contour Map - Top of Devonian	1 copy
P.	Well Cross Sections	1 copy
Q.	General Cross Sections	1 copy

Amerada Petroleum Corporation

1.	Red outlined map of Bagley area	3 copies
2.	Schlumberger - BTA #1	2 copies
3.	Schlumberger - BTC #1	1 copy
4.	Schlumberger - BTD #1	1 copy
	Property Map	6 copies

BK:P 1/27/50 (10)

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR THE ESTABLISHMENT OF PRORATION UNITS AND THE UNIFORM SPACING OF WELLS IN THE BAGLEY SILURO-DEVONIAN POOL IN LEA COUNTY, NEW MEXICO	CASE NO. 191 ORDER NO. R-2

APPLICATION FOR REHEARING

Comes, now, Amerada Petroleum Corporation, Applicant herein, and alleges that on January 23, 1950, the Commission entered its order in the above styled case after due notice and hearing held on December 20, 1949, which said order denied the application heretofore filed herein by Amerada Petroleum Corporation for eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico, and that such order is believed by Applicant to be erroneous in the following particulars, to wit:

1. That the Commission erred in finding the evidence 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.

2. That the Commission erred in finding the evidence insufficient to prove that one well drilled on each eighty-acre tract would efficiently drain the recoverable oil from the pool.

3. That the order entered herein is contrary to and in disregard of the evidence introduced at the hearing which established by a preponderance thereof that eighty acres is the area that may be efficiently and economically drained and developed by one well, and that the establishment of eighty-acre proration units and uniform spacing of wells, as

requested by Applicant, will prevent waste, avoid the drilling of unnecessary wells and protect the correlative rights of all parties interested in said pool.

4. That the order entered herein is contrary to law.

WHEREFORE, Applicant respectfully requests that a rehearing be granted and after rehearing that the Commission enter its order establishing eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool, in Lea County, New Mexico, as requested by the application filed herein and evidence presented at the hearing in support thereof.

SETH & MONTGOMERY

By _____

_____

_____
Harry D. Page

_____
Booth Kellough

Attorneys for Applicant,
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 the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼ Section 2, Twp. 12 S., Rge. 33 E., N.M.P.M., in Lea County, New Mexico.

Case No. 191

REQUESTED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF PROTESTANT TEXAS PACIFIC COAL AND OIL COMPANY

Comes now protestant Texas Pacific Coal and Oil Company by its attorneys and requests the Commission to adopt the following Findings of Fact and Conclusions of Law.

Findings of Fact

1. The lease owners in the Bagley Devonian pool here involved have not all agreed upon a plan for the spacing of wells.

2. None of the royalty owners, overriding royalty owners, or owners of production payments have agreed upon the plan proposed by applicant for spacing of wells in the pool here involved.

3. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant would have the effect of preventing "waste", as such term is defined by Senate Bill No. 163, Acts of the 19th Legislature, State of New Mexico, 1949.

4. The applicant failed to prove, by a preponderance of the evidence, that the 80 acre fixed pattern spacing plan proposed by applicant is fair to the royalty owners in such pool.

5. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon the 80 acre fixed pattern spacing plan proposed by applicant would adequately and efficiently drain the recoverable oil from the pool reservoir.

6. The lease owners in the pool here involved have not all agreed upon the plan or method of distribution of the allowables, as proposed by applicant hereunder, nor have such lease owners all agreed upon the amount of the allowable per well proposed by applicant herein.

7. None of the royalty owners, overriding royalty owners, or owners of production payments, in the pool here involved, have agreed upon applicant's proposed plan or method of distribution of allowables, nor have such royalty owners agreed upon the per well allowable proposed by applicant.

8. The applicant failed to prove, by a preponderance of the evidence, that its proposed plan or method of distribution of allowables, or its proposed per well allowable, is fair to the royalty owners in such pool.

9. The applicant failed to prove, by a preponderance of the evidence, that wells drilled upon a 40 acre spacing pattern, in conformity with the existing Statewide spacing order, would constitute the drilling of unnecessary wells.

10. The applicant failed to prove, by a preponderance of the evidence, that applicant's proposed 80 acre fixed pattern spacing plan would afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil or gas in the pool.

11. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would reduce, or tend to reduce, the total quantity of crude petroleum oil and natural gas ultimately recoverable from the pool here involved.

12. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not afford the opportunity, insofar as practicable to do so, to each owner in the pool to produce, without waste, his just and equitable share of the oil and/or gas in the pool here involved.

13. Establishment of applicant's proposed 80 acre fixed pattern spacing plan would not properly protect the correlative rights of the lease owners and royalty owners in the pool here involved.

14. Applicant failed to prove, by a preponderance of the evidence, any basis or justification for granting its requested exceptions to the Statewide rules governing spacing of wells and assignment of allowables thereto, in the pool here involved.

Conclusions of Law

1. Granting of the application would result in "waste", as such term is defined in Senate Bill No. 163, Acts of the 19th Legislature of New Mexico, 1949.

2. Granting of the application would not properly protect the correlative rights of the owners in the pool.

3. Applicant's proposed allocation of a 40 acre allowable to an 80 acre proration unit results in unreasonable and discriminatory allocation between oil fields in this State.

4. Granting of the application and the establishment of the 80 acre proration unit and the fixed pattern spacing plan in the pool here involved would violate the provisions of Section 13 (c) of Senate Bill No. 163, Acts of the 19th Legislature, New Mexico, 1949, which provides that the owner of any tract that is smaller than the drilling unit established for the field shall not be deprived of the right to drill on and produce from such tract, if same can be done without waste.

Respectfully submitted,

Eugene T. Adair
Jack M. Campbell

By Jack M. Campbell
Attorneys for Protestant
Texas Pacific Coal and Oil Company

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

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.	CASE NO. 191 ORDER NO. R-2

MEMORANDUM BRIEF IN SUPPORT
OF
APPLICATION FOR REHEARING

Amerada Petroleum Corporation filed its application for eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool, Lea County, New Mexico. The matter came on for hearing on December 20, 1949. Texas-Pacific Coal and Oil Company appeared in opposition to the application. At the close of the evidence the Commission requested that both sides furnish suggested findings of fact and conclusions of law and took the case under advisement. Pursuant to this request by the Commission, suggested findings of fact and conclusions of law and memorandum brief in support thereof was filed by Amerada Petroleum Corporation. Texas-Pacific Coal and Oil Company also filed its suggested findings of fact and conclusions of law. On January 23, 1950, the Commission entered its order denying the application. An application for rehearing has now been filed.

The merits of this case have been presented in the brief heretofore filed. However, there is a matter of great

significance to the oil industry in its operations in New Mexico applicable to this case and other similar cases which has not heretofore been presented and which is worthy of the most careful consideration.

The Bagley Siluro-Devonian Pool is a deep pool. It is located more than 10,000 feet below the surface. The nearby Knowles Pool is also a very deep pool, being located approximately 12,500 feet below the surface. The drilling of wells into these pools is a very expensive and hazardous undertaking. The discovery well in the Bagley Siluro-Devonian Pool cost approximately $312,000.00 and the estimated cost of future wells was approximately $225,000.00. The discovery well in the Knowles Pool cost approximately $350,000.00, and the estimated cost of future wells in that pool was estimated to cost between $260,000.00 and $270,000.00. This is a tremendous sum of money for any operator, big or small, to risk in the drilling of one well. In addition to that the geophysical operations necessary to discover these pools require the expenditure of enormous sums of money.

There are undoubtedly many more deep pools below the depth of 10,000 feet in New Mexico, and if these pools are to be adequately explored and developed it is economically necessary to permit them to be developed on proration units larger than forty acres. The Commission has already considered the testimony as to the probable drainage area of one well in the Bagley Siluro-Devonian Pool and we do not think there is any serious controversy in that regard. The technical

witnesses who have studied that pool, and other pools, were of the opinion that one well would adequately drain at least eighty acres. Even if there be some doubt in the minds of the Commission as to the accuracy of these opinions, in view of the great depths of the wells and the tremendous cost and risk involved, it would seem only fair that the operators be permitted to develop the pools on the basis of eighty acres in accordance with their own beliefs and convictions as to drainage, and thereby obtain additional information from which other estimates with respect to drainage could be made if the original opinions appear to have been in error. It is economic waste to require the operators to spend an additional half-million dollars drilling two additional wells in each quarter section when it may ultimately be determined that this expenditure was unnecessary and that the oil could have been recovered without these extra wells. The only time the operator can be helped is in the early stage of the development of the pool. After the pool has been developed on forty acres it is too late. No one can be hurt by wide spacing during the exploratory period in the development of an oil pool. Additional wells can always be drilled but money wasted on unnecessary wells can not be recovered. The statement in the Order that it shall not be construed to require one well to forty acres, or as a determination that such spacing constitutes reasonable development under the implied covenants of the oil and gas leases, is a platitude that as a practical matter is of no value or assistance to the operator. As a matter of law, the order would not have that effect in any event.

It is our sincere belief that if the deep pools in New Mexico are to be adequately explored and developed that the Commission should permit such development on wider spacing than forty acres. We sincerely believe that to adhere to a rule of thumb requiring forty-acre proration units, regardless of the depth of the pools and the cost of the wells, is economically unsound, detrimental to the operators and contrary to the best interests of the State of New Mexico.

It is true that there may be some cases where the operator can recover the cost of his well by even drilling a well to every forty acres in certain parts of the pool. But in many cases it will be uneconomical to drill a well to such great depth on every forty acres in the pool. If an operator knows in establishing its budget for drilling expenses that it will be required to drill a well on every forty acres in the event oil is discovered at a cost of approximately $250,000.00 per well, it may well look elsewhere to spend its money. On the other hand, if an operator knows that when oil is discovered at great depths it will be permitted to develop the properties on wider spacing than forty acres, it will be encouraged to spend its money in search for the deep pools in New Mexico. To any company, large or small, a dry hole at the cost of a quarter-of-a-million dollars is not and can not be lightly considered. Every operator knows that in the development of any oil pool there will be dry holes. If in addition to that the operator has to contemplate the drilling

of unnecessary wells at such tremendous costs it would be poor business judgment not to question the advisability of attempting to develop deep pools in New Mexico.

These remarks are not only applicable to the case at hand involving the Bagley Siluro-Devonian Pool, but are equally applicable to other pools discovered and yet to be discovered in New Mexico below the depth of 10,000 feet.

As far as concerns the question of uniform spacing, we have presented our views in the brief heretofore filed, and wish only to further add that we earnestly believe that the best and most equitable way to develop any oil pool so as to protect the rights of all parties is on a uniform spacing pattern providing for exceptions in exceptional cases, with proper adjustments of allowable to meet the particular situation then existing.

We respectfully submit that it will be inimical to the interests of the State of New Mexico and unfair to the applicant to deny its application for eighty-acre proration units and uniform spacing in wells in the Bagley Siluro-Devonian Pool as requested in this case.

Respectfully submitted,

SETH & MONTGOMERY

By Oliver Seth

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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 THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTS #1 WELL, LOCATED IN NW/4 SE/4 SECTION 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO

CASE NO. 191

FINDINGS OF FACT AND CONCLUSIONS OF LAW REQUESTED BY APPLICANT, AMERADA PETROLEUM CORPORATION

FINDINGS OF FACT

1. That on July 26, 1949, the Applicant, Amerada Petroleum Corporation, completed a well known as the "Amerada-State BTA No. 1 Well" located in the center of the NW/4 SE/4 of Section 2-12S-33E, Lea County, New Mexico. Said well was drilled to a total depth of 11,766 feet and encountered the top of the Devonian formation at 10,734 feet. The well was plugged back and finally perforated from 10,950 feet to 10,965 feet, and is producing through said perforations. Upon testing the well flowed 400 barrels of oil in 5½ hours through a ½" choke with a gravity of 44.4 and a gas/oil ratio of 28 to 1. The top of the pay section in the Devonian formation is 10,790 feet and the base of the pay section is approximately 10,980 feet.

2. That the probable productive limits of the Devonian formation discovered in said well and from which it is producing is as follows, to wit:

E/2 of Sec. 34 and
All of Sec. 35 and
W/2 of Sec. 36, all in 11S-33E, and

E/2 of Sec. 3 and
All of Sec. 2 and
W/2 of Sec. 1 and
N/2 of Sec. 11 and
NW/4 of Sec. 12, all in 12S-33E,
Lea County, New Mexico

3. That the pool or reservoir discovered by said well and from which it is producing is a new common source of supply in the State of New Mexico and has been named and designated by the Oil Conservation Commission as the "Bagley-Siluro-Devonian Pool".

4. That in addition to the discovery well described above, there were, at the time of the hearing herein, then completed or drilling the following wells within the probable productive area of said new common source of supply described above, to wit:

(a) Amerada-State BTC No. 1 Well, located in the center of the SE/4 SW/4 of Sec. 35-11S-33E;

(b) Amerada-State BTD No. 1 Well, located in the center of the SE/4 SW/4 Sec. 2-12S-33E;

(c) Texas Pacific Coal & Oil Company No. 1 State B- Account No. 1, located in the center of the SE/4 NE/4 of Sec. 2-12S-33E;

(d) Amerada-State BTD No. 2 Well, located in the center of the NW/4 SE/4 Sec. 35-11S-33E, which well at the time of the hearing herein was drilling at a depth of approximately 7,000 feet;

(e) Amerada-Simmons No. 1 Well, located in the center of the NW/4 NW/4 Sec. 11-12S-33E, which well at the time of the hearing herein was drilling at the depth of approximately 3685 feet;

(f) Texas Pacific Coal & Oil Company No. 1 State C- located in the NW/4 NE/4 Sec. 2-12S-33E, which at the time of the hearing herein was drilling at the approximate depth of 4,000 feet;

That in addition to the wells described above, Applicant, Amerada Petroleum Corporation, drilled its Amerada No. 1 Caudle located in the center of the SE/4 NE/4 of Sec. 10-12S-33E, which tested salt water in the same stratigraphic horizon that is producing oil in the discovery well described above, and which has been completed as an oil well in a shallower formation.

That in addition to the wells described above, the Mid-Continent Petroleum Corporation drilled its No. 1 State

Land 65 Well, located in the center of the SW/4 NW/4 of Sec. 1-12S-33E, which well was not drilled to a sufficient depth to reach the Devonian formation from which the discovery well is producing, but said well was at the time of the hearing herein completed as an oil well in a shallower formation.

5. That the order entered herein should cover all wells now or hereafter drilled to and producing from the common source of supply from which the discovery well, as above described, is now producing, whether within the probable productive area as delineated above or any extension thereof, as may be determined by further development, so as to insure a proper and uniform spacing, developing and producing plan for all wells in this common source of supply.

6. That the Bagley-Siluro-Devonian Pool, as found in the discovery well at the depths hereinabove set forth, is a common source of supply which should be drilled and developed on proration units larger than those normally established under the present rules and regulations and orders of the Commission with respect to proration units, because of the depth of such wells, the time necessary to drill said wells, and the high cost and expense required in the drilling and completion of said wells, together with the effective drainage area of each well located in said pool, and that proration units of eighty acres, or one-half of a governmental quarter section, are necessary and proper for the drilling and development of said common source of supply, such being the area which may be efficiently and economically drained and developed by one well.

7. That to protect the correlative rights of all parties hereto, and to prevent the unnecessary pooling of separately owned tracts within a proration unit, the units should be formed by dividing each governmental quarter section

by a line from North to South through the center thereof so that the unit shall comprise the East Half and the West Half of each governmental quarter section, except the following units, to wit:

N/2 NW/4 Sec. 35-11S-33E
S/2 NW/4 Sec. 35-11S-33E
N/2 NE/4 Sec. 2-12S-33E
SW/4 NE/4 and NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 and NE/4 SE/4 Sec. 2-12S-33E
S/2 SE/4 Sec. 2-12S-33E
N/2 NE/4 Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

8. That to insure the proper and uniform spacing of all wells drilled to the common source of supply, and to protect the correlative rights of all 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, with a tolerance of 150 feet in any direction to avoid surface obstructions.

9. That in the event the well referred to above, known as the "Mid-Continent Petroleum Corporation No. 1 State Land 65" located in the center of SW/4 NW/4 Sec. 1-12S-33E, is deepened to the Siluro-Devonian formation from which the discovery well is now producing, that said well should be granted an exception to this spacing order and should be considered the well for the proration unit on which it is located for the reason that said well was commenced prior to the completion of the discovery well.

10. That until further order of the Commission the allowables for all wells drilled to said common source of supply should be computed on the same basis as in the case of other proration units of forty acres, applying the deep pool adaptation provided for in the general rules and regulations

of the Oil Conservation Commission and any other special orders that may, from time to time, be applicable, it being understood that the Commission hereby reserves the jurisdiction and right at any future time to increase the allowable if, after notice and hearing, the evidence submitted justifies such increase.

11. That in the event good cause is shown for the granting of an exception to the well location pattern herein provided for, such exception should be granted by the Commission after notice and hearing, but in the event such exception is granted the allowable for said well shall be reduced in an amount to be determined by the Commission in its discretion in accordance with the evidence presented at the hearing in order to protect the correlative rights of all parties in said common source of supply.

12. That except as above specifically set forth, all of the present rules, regulations and orders of the Commission are adequate and sufficient to properly cover the drilling, equipping, and operating of wells drilled into the new common source of supply referred to above, and therefore the general state-wide rules and regulations should remain in full force and effect, except as modified, amended or superseded in the particulars specifically set out above.

CONCLUSIONS OF LAW

That based upon the findings of fact set out above, Applicant requests the Commission to enter the following proposed

ORDER:

1. That the Amerada-State BTA No. 1 Well located in the center of NW/4 SE/4 Sec. 2-12S-33E, Lea County, New Mexico, producing from the Siluro-Devonian formation at the approximate depths hereinabove set forth, discovered a new common source of supply not heretofore discovered and produced

in this state, and that the probable productive area of said new common source of supply is as follows:

E/2 of Sec. 34
All of Sec. 35
W/2 of Sec. 36, all in 11S-33E

E/2 of Sec. 3
All of Sec. 2
W/2 of Sec. 1
N/2 of Sec. 11
NW/4 of Sec. 12, all in 12S-33E
Lea County, New Mexico

That said new common source of supply is designated the "Bagley-Siluro-Devonian Pool".

That the order entered in this case is intended to cover all of the common source of supply from which the Amerada-State BTA No. 1 Well, described above, is producing, and any and all wells drilled to and produced from said common source of supply, whether within or without the probable productive area delineated above, or any extension thereof, as may be determined by further development, shall be drilled on the spacing pattern hereinafter set forth.

2. That proration units of eighty acres, or an area equivalent to one-half of a governmental quarter section are hereby established for the production of oil and gas from the "Bagley-Siluro-Devonian Pool", and in order to protect the correlative rights of the parties, said units shall comprise the East Half and the West Half of each governmental quarter section within said area, except the following units, to wit:

N/2 NW/4 of Sec. 35-11S-33E
S/2 NW/4 of Sec. 35-11S-33E
N/2 NE/4 of Sec. 2-12S-33E
SW/4 NE/4 and NW/4 SE/4 Sec. 2-12S-33E
SE/4 NE/4 and NE/4 SE/4 Sec. 2-12S-33E
S/2 SE/4 of Sec. 2-12S-33E
N/2 NE/4 of Sec. 11-12S-33E
S/2 NE/4 Sec. 11-12S-33E

3. That all wells drilled into said common source of supply known as the "Bagley-Siluro-Devonian Pool" shall be located in the center of the Northwest and Southeast Quarters

of each governmental quarter section, with a tolerance in any direction of 150 feet to avoid surface obstructions, except the Mid-Continent Petroleum Corporation No. 1 State Land 65 Well, located in the center of the SW/4 NW/4 of Sec. 1-12S-33E, in the event said well is deepened and is productive in said common source of supply, in which event said well is hereby granted an exception to this order and shall be considered the well for the unit upon which it is located.

4. That the daily oil allowable of a normal unit of eighty acres, or an area equivalent to one-half of a governmental quarter section, assigned to each and every well hereafter drilled and produced in conformity with the spacing pattern hereinabove provided, shall be the proportional factor of 4.67 times the top allowable, until such time as the Commission may issue such further and additional orders, whether general state-wide orders or special orders in this case, or general rules and regulations affecting the allowable of this pool as may be deemed necessary, provided that the Commission reserves jurisdiction to increase said allowable after notice and hearing if the evidence produced thereon justifies an increase.

5. That the Commission may for good cause shown, after notice and hearing, permit the drilling of a well off of the spacing pattern herein provided, but (except for the exception herein granted to the Mid-Continent Petroleum Corporation No. 1 State Land #65 Well in the event it is deepened to the Bagley-Siluro-Devonian Pool), if any well is drilled off of the spacing pattern herein provided as the result of such an exception granted by the Commission after notice and hearing, the allowable for the proration unit on which said well is located shall be reduced, the amount to be determined by the Commission in accordance with the evidence presented at the hearing.

6. That all rules, regulations and orders heretofore issued by the Commission which may conflict herewith are superseded with respect to the Bagley-Siluro-Devonian Pool. Otherwise, said rules, regulations and orders shall be fully applicable hereto.

7. That the Commission retains jurisdiction of this case for the purpose of issuing such further and additional orders that may be necessary to carry out the terms and provisions hereof as set forth above, and to meet changed conditions, prevent inequities and to preserve the correlative rights upon the motion of the Commission or upon application of any interested party, after a public hearing and notices provided by law.

Respectfully submitted,

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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 THE ESTABLISHMENT OF PRORATION UNITS AND UNIFORM SPACING OF WELLS FOR THE COMMON SOURCE OF SUPPLY DISCOVERED IN AMERADA-STATE BTA NO. 1 WELL, NW/4 SE/4 SEC. 2, TOWNSHIP 12 SOUTH, RANGE 33 EAST, LEA COUNTY, NEW MEXICO

CASE NO. 191

MEMORANDUM BRIEF

This is the application of Amerada Petroleum Corporation for eighty-acre proration units and uniform spacing of wells in the Bagley Siluro-Devonian Pool in part of Townships 11 and 12 South, Range 33 East, Lea County, New Mexico.

There are two principal questions in this case. (1) First is whether eighty-acre proration units and the well spacing pattern proposed by Amerada is justified from the standpoint of reservoir performance. (2) The second main question is whether the proposed order requested by Amerada will protect the correlative rights of all persons owning an interest in this pool, so that they may recover their just and fair share of the

oil and gas recoverable from the pool in accordance with their property ownership.

Amerada's technical witnesses presented testimony as to the type and quality of the subject reservoir and as to its predicted performance or production based on modern engineering concepts of reservoir performance and on the actual performance of other known reservoirs of similar characteristics. This testimony establishes that:

1. One well will adequately drain at least 80 acres, and

2. The correlative rights of all interested parties will be protected by the well spacing and production allocation order proposed by Amerada.

The Texas Pacific Coal and Oil Company, appearing in opposition to the proposed order, presented much evidence having nothing to do with the two essential points involved in this hearing, and practically no concrete or abstract evidence on these two essential points.

If the opposition made any clear point it was that they want a spacing and allocation formula which will permit them to gain the greatest amount of production for themselves without

regard to the ultimate recovery from the reservoir as a whole and without regard to the correlative rights of all interested parties.

Applicant is asking for the establishment of eighty-acre units, each of which (except certain exceptions referred to below to avoid pooling of separately owned tracts) shall comprise the East Half and the West Half of each governmental quarter section within the probable productive limits of the pool, as delineated on the map introduced as applicant's "Exhibit 1". The well spacing pattern proposed by applicant is that all wells be located in the center of the Northwest Quarter and the Southeast Quarters of each governmental quarter section. The map introduced as applicant's "Exhibit 1" shows the location of all drilled and drilling wells in this pool and shows the proposed location of all wells that may be drilled according to the spacing pattern by cross marks. The map also shows lease and royalty ownership but does not specifically set out each proration unit. Only the proration units which are exceptions to the general plan are shown on the map by dotted lines. For your convenience we are enclosing a copy of the map.

Pursuant to the request by the Commission, we are enclosing a draft of findings of fact and conclusions of law which we think should be entered in this case. We have

prepared the conclusions of law in the form of a proposed order, which we respectfully request the Commission to enter in this case.

ORDER PROPOSED BY AMERADA PETROLEUM CORPORATION

In substance, applicant's proposed order provides for the creation of eighty-acre proration units to be arranged as described above. All wells are then to be located according to the uniform spacing pattern as set out above, with a tolerance of 150 feet in any direction to avoid surface obstructions. The proposed order further provides that the Commission shall have the power and authority for good cause shown to permit an exception to the well spacing pattern herein proposed, after notice and hearing, but in the event such exception is granted that the allowable shall thereupon be reduced in an amount to be determined by the Commission in their discretion according to the evidence submitted at the hearing. The proposed order requested by applicant further provides that the allowable for each proration unit shall be computed as a forty-acre proration unit with the deep pool adaptation provided for in the general rules and regulations, with a provision that the Commission reserves the right at some future time, upon

proper application and after notice and hearing, to increase the allowable if the evidence so justifies.

A detailed analysis of the essential testimony presented at this hearing is given below, which we believe supports the above conclusions and justifies the proposed order.

(The letter "R" as used herein refers to the Record followed by the page number.)

1. ONE WELL WILL EFFECTIVELY DRAIN AT LEAST EIGHTY ACRES

The first question requires a brief look at the facts with reference to the character of this pool.

It is undisputed that the Bagley Siluro-Devonian Pool (which we shall for convenience call the "Bagley Pool") is producing from the Devonian formation at a depth of approximately 11,000 feet below the surface. (R. 10-11) In the BTA No. 1 Well, the top of the Devonian pay section was 10,790 (R. 11) and the base of the pay section is approximately 10,980 (R. 11). The well is producing through perforations from 10,950 to 10,965. (R.11) Other wells show that the formation dips rather steeply toward the southwest. (R. 12; 22-23) It will be noted that the wells drilled in this pool run in a line from southwest to northeast, except for Amerada-State BTC. This well is the highest well in the Bagley Pool. (R. 22) It is indicated by the completed wells that this pool has an axis running, roughly, north by

west to south by east, with a rather sharp dip off the the southwest. However, because of the location of the wells, they give a rather limited geological control and very little is known as to the exact dip of the formation outside of the limited area approximating a line between the various wells. (R. 67;77)

It was also undisputed that the energy of this pool is water drive. Mr. R. S. Christie and Mr. C. V. Millikan, both petroleum engineers for Amerada Petroleum Corporation, testified that this pool has an effective water drive. (R. 16; 51; 97-98) This was not denied by either of the witnesses for the Texas Pacific Coal and Oil Company (hereinafter called protestant) and was in fact substantially admitted by them and their entire hypothetical testimony and exhibit are based on an assumed water drive reservoir (R. 93).

It was further undisputed that the Bagley Pool is a reservoir of at least average, and probably better than average, porosity and permeability for Devonian formation pools.

Mr. Veeder, geologist for Amerada, testified that "This pool has good porosity and apparently permeability." (R. 13) And he further testified that it has continuous, although not uniform, porosity and permeability. (R. 25;31; 39; 44-45) Mr. Carter, geologist for protestant, testified that this pool has a porosity

which is average and in some places superior or better than most Devonian pools. (R. 71;82) His direct testimony was as follows:

> "Mr. McCormick: How does that compare with other pools?
>
> "The Witness: Well, I am --
>
> "Mr. McCormick (interrupting): I mean, is it good or bad or medium, or what, so far as porosity is concerned?
>
> "The Witness: I would say it is approximately average in the type of reservoir that we have here.
>
> "Mr. McCormick: Approximately what?
>
> "The Witness: Approximately average for the type of reservoir that we have here. It might be a little higher than average.
>
> "Mr. McCormick: That is the porosity?
>
> "The Witness: Yes.
>
> "Mr. McCormick: And the permeability, is that higher, higher than the average?
>
> "The Witness: Well, I am not in a position to give those - I just don't know."

Based upon this evidence that this Bagley Pool has an effective water drive, and has at least an average, if not better porosity, as compared with other Devonian pools, and has a continuous permeability, it was concluded by both Mr. Millikan and Mr. Christie that one well would efficiently and effectively drain an area of at least eighty acres. This conclusion was based upon the further information obtained by

comparison with analogous Devonian pools of Hightower, Knowles, Crossroads and Jones Ranch, and further supported by the comparable bottom-hole pressure information obtained from the wells drilled in this Bagley Pool as compared with the bottom-hole pressure information in the wells in the analogous Devonian pools in the area, which are being developed on eighty-acre spacing. (R. 19; 97-98) The fact that there has been very little decline in pressure in the analogous pools and in this pool confirms this conclusion. The real test of drainage is the performance of the wells. The production from the wells drilled in the analogous pools on eighty-acre spacing shows that they are effectively draining the reservoir.

Mr. Millikan summed up the point, as follows: (R. 97-98)

"Q (by Mr. Kellough): Mr. Millikan, in your opinion on this Bagley Reservoir, will one well adequately and efficiently drain an area of at least 80 acres?

"A I believe it will.

"Q Would you care to make any statement to the Commission in explanation of your conclusion?

"A I think we have several points that indicate that it is a good water drive reservoir. I don't believe there has been any controversy of the testimony that it is a rather - that it is permeable, I would say more-than-average permeable reservoir. As a general rule, we find that low gas-oil ratios are present where we do have a good water drive, that in itself not being conclusive, however, but as a general rule that condition does exist.

"We have a pressure there that is about equal to hydrostatic head and about normal for that depth of reservoir. We have found a good quantity of water to the side and below the oil reservoir itself. The indications, I believe, are fairly good that we have a large aquafer, although we don't have sufficient control to demonstrate it definitely. We have, also, some other pools established in that same stratigraphic position that is the top of the Devonian in this general area, and on two of those I think we have evidence of a good water drive. One of those is Crossroads. I am not familiar too much with the detail of that, but it is my understanding there has been no declining pressure in the approximate year and a half that those wells have been in. I believe two of them are producing some water and the dry holes that have been drilled around them have shown evidence of an ample quantity of water. That also has a low gas-oil ratio, but not as low as is present in these Bagley wells.

"This field on which we have more history is just across the state line in Texas, in which there are eight wells in the field, which has been developed on eighty-acre spacing, and that pressure under an allowed of 240 barrels a day on the 31 a day allowed, did have a little decline in pressure; earlier this year when the production was reduced we had an increase in pressure, during the first eight months of this year. I think, combining all of that gives very good evidence that it is quite reasonable to expect a good water drive in the Bagley."

Now let us look at what protestants have offered in opposition to the conclusion that one well in this pool will effectively drain an area of at least eighty acres.

There is only one direct statement that one well will not effectively drain an area of eighty acres. It is Mr. Schaehle's answer to the following rather ambiguous question: (R. 95)

"Q Do you think - in your opinion, do you believe that one well to 80 acres as proposed here will effectively drain all recoverable oil under the 80-acre tract, or under 80 acres of oil if you want to put it on that basis, in attempting to get away from correlative rights and move - say you got Jim Doe's oil, some of his oil, and he got some of yours. In any event, one well, regardless of how it is located, will not, in your opinion, regain effectively all recoverable oil under 80 acres?

"A No, it won't. It will not."

This conclusion is wholly unexplained and unsupported. Furthermore, it is actually contrary to the rest of his entire testimony which assumed an effective water drive reservoir wherein one well would drain an area of 80 acres. His Exhibit "Q", prepared to show the drainage of a mythical water drive pool, assumed a drainage area of 80 acres per well. If his statement quoted above is correct then the rest of his testimony and his exhibit are wholly irrelevant.

Also Mr. Carter, protestants' geologist, stated that this pool is of equal or better porosity than the average Devonian pool and the undisputed evidence is that it has an effective water drive. Thus it must be Mr. Schaehle's opinion that an average Devonian pool with an effective water drive cannot be effectively developed by one well to 80 acres. This is contrary to the actual experience in cases of other similar Devonian pools in the area which are being developed on 80-acre

units under orders of this Commission.

It is therefore difficult to believe that Mr. Schaehle was serious in his flat assertion that one well will not drain 80 acres in the Bagley pool.

The only other effort of protestants on this point was the testimony of Mr. Carter with reference to the core analyses in the defendant's one well. Mr. Carter testified that there were dense sections in the well. However, he did admit that there was good porosity and although varied in character, as stated above, that the pool was of average or better porosity than generally is found in Devonian pools. He did not testify that this so-called dense area would prevent one well from effectively draining eighty acres. On this point Mr. Millikan testified as follows: (R. 98-99)

> "Q Mr. Millikan, do you have any comment which you wish to make to the Commission with reference to the testimony regarding the dense areas which appeared in the core analysis introduced by the Texas Pacific Coal Company?
>
> "A Well, those dense areas are, I think, as they stated, not anything unusual in these Devonian reservoirs, or for that matter in lime reservoirs, or for that matter, in any reservoirs. We have areas or intervals or strata of varying permeability, and very often the strata are of greater or lesser thickness that might not even show any presence of oil, which I believe in our examination of samples have rather consistently shown oil and I think the permeabilities have been, perhaps, too low to get any appreciable amount of oil, I think probably some of the testimony might be a little misleading regarding continuous

or discontinuous, or uniform porosity and permeability. I think, it seems to me, in summing it up that there was not a clear distinction between vertical permeability and horizontal permeability.

"Now, it is quite true, as was testified, I believe, by Mr. Schaehle, or Mr. Carter, or perhaps both, that where we run into these dense areas, we probably do not have vertical permeability through those. In other words, this water that exists apparently entirely under this structure - the water movement is not directly vertical. I don't believe the point was made clear, but I think that we do have lateral permeability through this reservoir. In the first place, that is a common thing to expect in reservoirs. We have that in all reservoirs, and I think the concrete evidence of that is the fact that we do have an accumulation of oil above water, with such evidence as we have being that it is a relatively flat or level water table. And if we didn't have a continuous permeability through here, then how did the oil all get up there just in this, as someone referred to this morning, equivalent of a bowl turned upside down. And if we are going to have a water drive, which I think all have indicated probably exists - and if you are going to have a water drive, you have got to have that continuity of permeability throughout the reservoir."

To summarize, we think the conclusion that one well will effectively drain at least 80 acres is supported by the following evidence:

(1) That the Bagley pool has an effective water drive. This is not disputed.

(2) That the reservoir is of average or better porosity than most Devonian pools and has continuous porosity and permeability. This is admitted by protestants' own witnesses.

(3) That the experience in comparable pools in

the area supports the conclusion that one well will effectively drain an area of at least 80 acres. The actual experience at Crossroads and Jones Ranch supports this conclusion and it is also indicated by performance to date in the Hightower and Knowles pools.

The only evidence to the contrary is Mr. Schaehle's flat statement quoted above, which is wholly unsupported by the facts and actually contrary to protestants' own testimony on the issue of correlative rights.

If one well on each eighty-acre proration unit will effectively drain the pool, then an additional well on each eighty-acre unit, under any kind of a forty-acre pattern, would be an unnecessary well.

Section 69-213 of the New Mexico Statutes (1941 Ann.) provides in part as follows:

> "No owner of a property in a pool should be required by the Commission directly, or indirectly, to drill more wells than are reasonably necessary to secure his proportionate part of the production. To avoid the drilling of unnecessary wells a proration unit for each well may be fixed, such being the area which may be efficiently and economically drained and developed by one well. The drilling of unnecessary wells creates fire and other hazards conducive to waste and unnecessarily increases the production cost of oil and gas to the operator and thus also unnecessarily increases the cost of the products to the ultimate consumer."

It was suggested by Mr. Anderson, representing the Malco Refining Company (which company has no interest whatsoever

in this pool), that applicants have failed to prove that one well drilled to a density of forty acres would not recover the drilling, equipping and operation costs, and he stated that it was his opinion that if the oil recoverable by one well to forty acres would be sufficient to pay for the well, such well should be drilled on that basis. (R. 62 and argument not reported) This statement overlooks two basic facts. It first overlooks the fact that under the evidence in this case there would be no additional oil recovered by the extra well and, therefore, the additional recovery would not pay for the extra well. It further overlooks the New Mexico law quoted above, which seeks to prevent the drilling of unnecessary wells. If one well can effectively recover the oil from an area of eighty acres, under the New Mexico law the operator is not required to drill an additional unnecessary well even though the aggregate oil recovery would be sufficient to pay the cost of drilling, equipping and operating both wells. It would still be an unnecessary well even though it was a paying well. Therefore, whether the additional well required by forty-acre spacing would result in a paying well is not a proper or material issue in this case. The material question is whether such well would be an unnecessary well.

2. SPACING PATTERN PROPOSED BY AMERADA PETROLEUM CORPORATION PROTECTS CORRELATIVE RIGHTS OF ALL PARTIES

We now come to the second main question in the case,

which is whether the proposed spacing pattern protects the correlative rights of the owners of this pool so as to assure each owner of recovering the oil from this common pool to which, by reason of his ownership, he is justly entitled. It is important to bear in mind at the very outset that the doctrine of correlative rights does not mean that every owner of an interest in an oil pool is entitled to an equal amount of oil. In any pool there are relatively good leases and poor leases located favorably and unfavorably on the structure. The owner of the good lease is entitled to a greater recovery than the owner of the poorly located lease. The doctrine of correlative rights simply insures that each owner will recover proportionately the amount of oil and gas which is justified by reason of his ownership, depending upon the location of his property structurally in the pool. This can best be accomplished by uniform spacing of wells throughout the pool. The protestants' position is that there should be no uniform spacing of wells so that each property owner may locate a well anywhere upon his lease, which he considers the best position for himself, in disregard of his neighbor.

Protestants first contend that the creation of eighty-acre proration units with the well spacing pattern as recommended, will result in certain units around the edge of the pool having included therein some nonproductive acreage. However, their own geologist, Mr. Carter, on cross-examination admitted that this fact would be

the same on forty-acre spacing, or any other spacing for that matter, since there will always be units around the edge of any oil pool which will contain some nonproductive acreage. (R. 87) Therefore, this is not an argument against the well spacing pattern proposed by applicant. In fact, the order requested by applicant contains a provision where an exception could be granted in such case if the limits of the pool were known, so that the well could be located on the productive part of the unit and the allowable reduced to eliminate the non-productive acreage. This, of course, would be necessary to protect the correlative rights of the parties, since the unit at least as to productive acreage would be smaller than the normal productive unit.

It is next contended that a well drilled according to the well spacing pattern proposed by applicants will drain oil from under an adjoining owner's lease, and certain exhibits were prepared to illustrate this point. However, under protestants' own theory of well spacing which they propose the result would be no better. The illustration used by protestants assumed area of drainage comprising 80 acres around the Amerada B.T.D. well. Under protestants' theory a well might be drilled in the corner of NE of NW of Section 2, 330 feet from each lease line. If, as they apparently contend, one well will drain 40 acres, then such well would drain from under

the adjoining owner's lease to the same extent as in protestants' illustration. Mr. Carter admitted that this objection would not be corrected by applying protestants' theory of well spacing. (R. 83)

Protestants also contend in respect to the question of correlative rights that the wells under its theory should be located as high upon the structure as possible since this is an effective water drive pool and the water drive will force the oil up structure. In this way they argue that the owner of a particular lease will be able to recover more of the oil which underlies his particular lease. Mr. Schaehle prepared fictitious and hypothetical "Exhibit Q" presumably to illustrate this point. However, as stated at the very outset, this overlooks the fact that the doctrine of correlative rights is not and cannot, as a practical matter, be based upon each owner recovering every drop of recoverable oil from under his own lease, since this is a physical impossibility. Therefore, if one were to permit the location of wells at the top of the structure on each lease, the result may be decidedly inequitable to the owners of the leases on top of the structure. The owners of the top leases may by the very nature of the reservoir have a more valuable property right than the owner of a lease at the bottom of the structure in a water drive pool. Therefore,

the owners of the best leases under the doctrine of correlative rights are entitled to a greater recovery of the oil from the reservoir. The result of protestants' contention in this respect is that the location of the wells in the manner which they recommend will tend to equalize recovery. The doctrine of correlative rights is not intended to equalize recovery. The correlative rights of the parties are not protected by giving the owner of a poor lease a greater share of oil than he is entitled to recover at the expense of the owner of the better lease.

Protestants' last contention in this respect is that eighty-acre spacing will result in the drilling of more dry holes than will be drilled on forty acres. Protestants' concern for the operator in this instance is either feigned or misplaced. On cross-examination Mr. Veeder, geologist for Amerada, was asked an assumed question with respect to the Hightower Pool. (R. 35-37) In that pool the Amerada B.T.B. Well is a producing well, located in the middle of a forty-acre tract. Amerada on an eighty-acre spacing pattern then drilled a dry hole known as the "Roach Well" in the center of a forty-acre tract once removed to the south. The question was proposed that had the well been drilled in the center of the forty-acre tract immediately to the south of the B.T.B. Well, and assuming that it was a producing well, then Amerada would not have drilled the

dry hole in the Roach Well located in the center of the next forty-acre tract to the south. (R. 37) However, upon redirect examination (R. 45-46) Mr. Veeder exploded this misleading theory by pointing out that had Amerada drilled a well in the center of the forty-acre tract immediately south of the B.T.B. Well, it would then have been obligated, or Mr. Veeder as a geologist would have recommended, that his company then drill a third well in the center of the forty-acre tract still farther to the south which is the location of the Roach Well, and the result would be that instead of one well and one dry hole, Amerada would have drilled an extra unnecessary well at the cost of $225,000.00 and would still have drilled the dry hole. Therefore, under this theory advanced by protestants in the interest of economy the operator, instead of losing $225,000.00 by the dry hole, would have lost approximately a half million dollars by drilling an unnecessary well and a dry hole.

Mr. Millikan summed up the matter of correlative rights as follows:

> "Q I have one further question, Mr. Millikan. Do you have any comments which you care to make as to whether the 80-acre spacing pattern, which has been proposed by Amerada, will result in a disruption of the correlative rights of the parties in the pool, which could be remedied by any other spacing program?
>
> "A I do not see that 80-acre spacing, or 160-acre spacing, or 40-acre spacing, or 10-acre spacing, changes that picture at all.

"Certainly we have - in any oil pool, we reach the edge of the pool, and we find certain parts, whatever the spacing unit may be, that probably lie beyond the limits of oil production or beyond the limits of economic oil production. There may be some oil there, but it is not economic to drill. Then, that is, for all practical purposes, it becomes the limit of the pool. And there were no land lines there when that oil pool was formed. They have been put there subsequently, and they, as a general rule, are curve lines, as has been indicated in the testimony here; and regardless of the spacing, I think that those same conditions will exist. And the fact that we cannot recover all of the oil by 80-acre spacing, I don't see that it introduces any problems that wouldn't exist under any other spacing unit.

"Q Then, in your opinion, the spacing pattern which we have presented here will not prevent any of the owners in that reservoir from obtaining their fair and equitable share of the oil in the reservoir?

"A I think that under the recommendations that we have made here as to spacing and allocation, they will provide each operator, each landowner, each royalty owner, the opportunity to obtain his fair and equitable share of the oil from the reservoir.

PROTESTANTS' IRRELEVANT EXHIBITS

In order to dispel the thought that the length or size of the opposition is any measure of its quality, we have listed below all of protestants' exhibits to point out their utter irrelevancy to the questions involved in this case.

EXHIBITS:

"A" and "B" Farmout contract between T.P. and Amerada and copies of T.P.'s oil and gas leases. No title question is involved.

"C" and "D" Colored maps showing mineral and royalty ownership. This was already shown by applicants' Exhibit "A" previously introduced into evidence.

"E" and "F" Contour map of Glorietta Sand and of Pennsylvanian formation. Mr. Carter admitted neither of these maps had anything to do with this proceeding. (R. 81-82)

"G" Contour map of Bagley Pool. Mr. Carter admitted it was not an accurate representation of the actual structure. (R. 67-77)

"H" Schlumberger of protestants' well. This shows nothing inconsistent with applicant's theory.

"I", "J", "K", "M", "N" Core information on protestants' well. Protestants' witnesses did not contend that the density is sufficient to prevent effective drainage of 80 acres by one well.

"O" Celluloid copy of Exhibit "G"

"P" Hypothetical cross-section. The purpose of this exhibit was not disclosed by the witness. (R. 78-81)

"Q" Hypothetical cross-section of mythical water drive reservoir.

INCIDENTAL LEGAL QUESTIONS REGARDING FORCED POOLING OF SEPARATELY OWNED TRACTS

Some wholly extraneous issues have been injected into the case.

1. Protestants proved that they owned a lease, forty acres of which is located in this Bagley Pool and the balance located some place outside. (R. 65) They argued that if

eighty-acre proration units were adopted it would require the pooling of this forty acres with an adjoining forty-acre tract owned by applicant, and the result would be that the well on protestants' forty-acre tract would not hold the outside acreage beyond the primary term of the lease. This is not a correct conclusion of the law, but first let us point out that the spacing pattern whether it be 160 acres, 80 acres, 40 acres, 20 acres or 10 acres, does not change the legal problem involved. The same question would be involved if two twenty-acre tracts were pooled into one forty-acre unit, or two ten-acre tracts into a twenty-acre unit, or what have you. The second point is that well spacing is a matter of conservation and it is of no proper concern to this Commission whether a lease outside of an existing oil pool will or will not be held beyond the primary term by a well located on that part of the lease within the oil pool. The law with reference to the implied covenants of oil and gas leases dictates the development which will be required of any operator. However, in any event, the question is settled in the case of State ex rel Shell Corp. v. Worden, Commissioner of Public Lands (1940), 44 N.M. 400; 103 P.(2d) 124, where it was held that in a state lease in New Mexico where a separate portion of the lease has been assigned and oil discovered on the separately assigned portion, such well will hold the entire lease beyond the primary term. The effect of

pooling is an assignment by each to the other of part of his lease rights in the pooled reservoir.

2. The question was asked whether the situation would have been the same if the well was located on that part of the unit not covered by the lease having the outside acreage. This is an open question in New Mexico, but has been decided by the Supreme Court of Louisiana in the case of Hunter Company v. Shell Oil Company (1947) 211 La. 893; 31 So. (2d) 10, which holds that a well on a forced unit in Louisiana holds each and every lease, part of which is in the unit, as to all acreage including the outside acreage. See Section 8-1138, New Mexico Statutes, 1941 Anno. and Sec. 69-213, New Mexico Stat. 1941 Anno.

However, again we wish to point out that this problem exists regardless of the size of proration units or the spacing of wells. It can apply, as stated above, with equal force to two twenty-acre tracts in a forty-acre unit, as well as it can to two forty-acre tracts in an eighty-acre unit.

3. It also was suggested that the Commission may have no authority to enter a pooling order applicable to state leases. This contention is answered by Sec. 69-213 and Sec. 8-1138, New Mexico Statutes Anno., referred to above. There is no question but that the statutory authority exists. The only reason for the exceptions to the location of the proration units recommended by applicant was an effort to avoid the necessity of pooling agreements or forced pooling applications

where, without disturbing in any manner the well spacing pattern, single ownerships could be combined. This, of course, is a matter for the discretion of the Commission. The insinuation at the trial that these exceptions were made by Amerada in order to include its poor acreage with the good acreage of the Texas Pacific Coal & Oil Co. is unwarranted, malicious and wholly unfounded in fact and designed only to prejudice the Commission. (R. 105-106)

CONCLUSION

When the entire matter is carefully considered, it appears that protestants' position boils down to the proposition that well spacing should be established according to lease ownership, and by that they mean protestants' lease ownership. They asked that they be permitted to drill anywhere upon their lease in order to crowd their neighbor and get all of the oil they can for themselves. Viewed from the purely selfish standpoint of protestants' own company, this may appear to be a laudable motive; however, it is not one which the other operators in the field think should be accomplished at their expense.

The operators in this field are Amerada Petroleum Corporation, Mid-Continent Oil and Gas Company, Phillips Petroleum Company, Gulf Oil Corporation and Texas Pacific

Coal and Oil Company. Out of all of these operators it is significant to note that the only company objecting to the application for a uniform spacing and eighty-acre proration units in this Bagley Pool is the protestant.

We respectfully submit that the proposed order herein submitted should be granted by the Commission.

SETH AND MONTGOMERY

By J. O. Seth

J. O. Seth

Oliver Seth

Oliver Seth

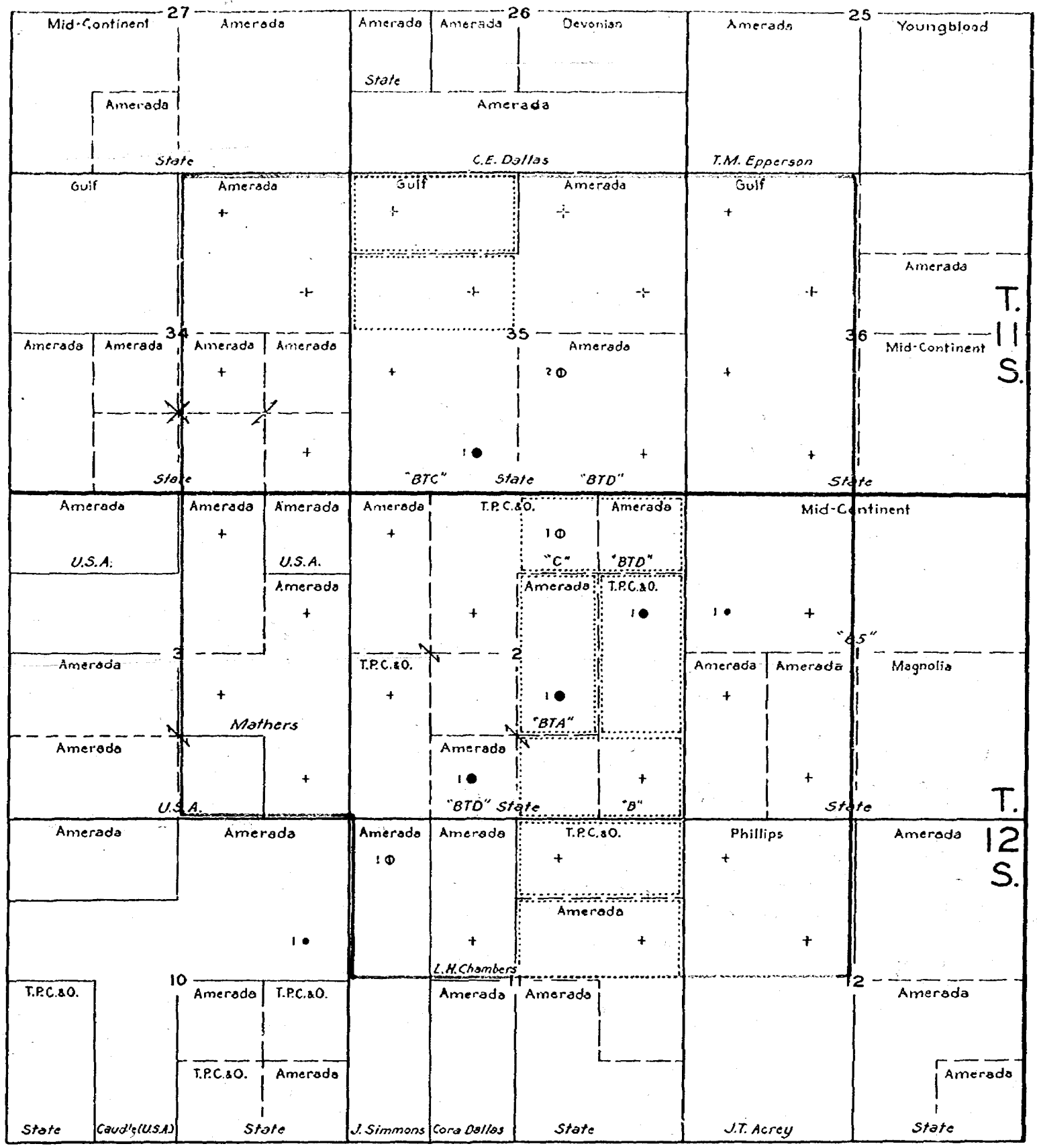
Harry D. Page

Harry D. Page

Booth Kellough

Booth Kellough

Attorneys for
Amerada Petroleum Corporation



R. 33 E.

BAGLEY FIELD

LEA COUNTY NEW MEXICO

● BAGLEY - SILURO-DEVONIAN POOL WELLS
• BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION
DECEMBER 20, 1949

Case No.

191

Application, Transcript,
Small Exhibits. Etc.

GOVERNOR EDWIN L. MECHEM
CHAIRMAN
LAND COMMISSIONER GUY SHEPARD
MEMBER
STATE GEOLOGIST R. R. SPURRIER
SECRETARY AND DIRECTOR

New Mexico
OIL CONSERVATION COMMISSION

P. O. BOX 871
SANTA FE, NEW MEXICO

EXHIBITS PRESENTED IN CASE 191

AMERADA PETROLEUM COMPANY

Exhibit No. 1--- Outline of Bagley, Area--Referred to on Page 8 of transcript.

Exhibit No. 2----Schlumberger Log of BTA, No. 1 (Page 9)

Exhibit No. 3----Schlumberger Log of BTC, No. 1 (Page 9)

~~Schlumberger~~
~~Exhibit~~XXXXX

Exhibit No. 4---Schlumberger Log of BTD, No. 1 (Page 10)

TEXAS-PACIFIC COAL & OIL COMPANY

Exhibit A--Agreement of Farmout between T.P. & Amerada.

Exhibit B-- Copies of 3 State Leases

Exhibit C--Lease Ownership Plat-Bagley area (Page 65)

Exhibit D--Mineral Fee Ownership Plat--Bagley Area

Exhibit E-- Geologic Map-Top of Glorietta--Bagley Area

Exhibit F--Geologic Map--Top of Pennsylvanian--Bagley Area

Exhibit G--Geologic map contoured on Base of Black shale--Bagley Area
Base of Black shale is top of Devonian by Amerada)
Blue line is estimate of water level.

Exhibit H--Schlumberger Log Of T.P. State B, No. 1

Exhibits I,J,K,L-- Pertain to Core graph of State B, No. 1

Exhibits M & N are pieces of core from State B NO.1

Exhibit O--Overlay Map of Bagley Area

Memo

From

To T. P. Hale B[th] /

elev. 4243

Top Dev. -6479 (10,722) Am

" Darby -6552 (10,795) Am

" J -6527 (10,770) TP

Non permeable zone

10,331 - 837

ROTARY ENGINEERING & MANUFACTURING CO., INC.

MIDLAND, TEXAS

CORE ANALYSIS SERVICE

TEXAS & PACIFIC COAL & OIL CO.
State B-1
Lea County, New Mexico

ROTARY ENGINEERING AND MANUFACTURING CO., INC.
DRILLING ENGINEERS
BOX 1007
MIDLAND, TEXAS

November 25, 1949

Texas & Pacific Coal & Oil Co.
601 West Missouri Street
Midland, Texas

Attention: Mr. O. R. Carter.

Gentlemen:

We are submitting to you eight (8) copies of our core analysis in both tabular and graphic forms on your State B No.1 well, Bagley-Siluro-Devonian Field in Lea County, New Mexico. These cores having been analyzed for porosity, permeability and fluid saturation as percent pore space occupied.

The porosities were obtained by resaturating eighteen (18) inch sections of the core, starting with vacuum and goinf to 1000 pounds applied pressure. The total volume of fluid injected was assumed to be the effective pore space. Volume, time and pressure measurements were made at 12 different intervals during the resaturation of each sample and the permeability was computed from t ese measurements. Thus the permeability measurements are non directional.

Curves are submitted showing resaturation characteristics of each sample.

Fluid saturation as percent pore space is believed to be unreliable due to the vuglar nature of the formation.

We wish to thank you for the consideration and cooperation shown us and our personnel in securing the information on this well.

Yours very truly,

ROTARY ENG. & MFG. CO., INC.

L. C. Locke

L. C. Locke

LCL:mp
Enclosure

ROTARY ENGINEERS LIMITED

CORE ANALYSIS TABULAR DATA

COMPANY Texas & Pacific Coal & Oil | WELL State B-1 | FIELD Bagley Fluro - Devonian

COUNTY Lea | STATE New Mexico | DATE 11-20-49 | ANALYST LCL, JS

FORMATION Devonian | TYPE ANALYSIS Special | JOB NO. L-65

REMARKS Analysis of entire core cut with diamond bit.

SAMPLE NUMBER	DEPTH	MATRIX POROSITY %	FRACTURED PORE %	TOTAL POROSITY %	EFFECTIVE POROSITY %	PERMEABILITY M. D.	TOTAL WATER SATURATION % P. V.	RESIDUAL OIL SATURATION % P. V.	PROBABLE PRODUCTION	REMARKS
1	10824-25.5				6.5	175	22.0	20.9	Oil	
2	25.5-27.0				3.8	5	33.4	16.4	"	
3	27.0-28.5				3.5	5	17.5	14.7	"	
4	28.5-30.0				4.5	10	17.5	14.3	"	
5	30.0-31.5				1.2	-.1	41.4	21.2	None	
6	31.5-33.0				0.4	-.1	55.4	12.4	"	
7	33.0-34.5				0.2	-.1	27.3	0.0	"	
8	34.5-36.0				0.2	-.1	35.2	0.0	"	
9	36.0-37.5				0.2	-.1	26.7	0.0	"	
10	10874.0-75.5				2.0	4	27.5	8.4	Oil	
11	75.5-77.0				2.6	4	36.4	4.3	"	
12	77.0-78.6				2.2	5	42.7	9.7	"	
13	78.5-80.0				4.0	40	21.3	16.8	"	
14	80.0-81.5				5.7	100	18.6	7.4	"	
15	81.5-83.0				6.0	55	16.7	8.9	"	
16	83.0-84.5				4.0	25	12.9	12.4	"	
17	84.5-86.0				7.4	110	22.6	16.3	"	
18	86.0-87.5				5.0	15	31.0	16.8	"	
19	81.5-89.0				11.5	130	14.7	18.7	"	
20	89.0-90.5				7.1	33	17.6	12.3	"	
21	90.5-92.0				3.4	13	29.7	4.7	"	
22	92.0-93.5				4.7	32	18.3	10.6	"	
23	93.5-95.0				5.8	12	19.7	7.8	"	
24	95.0-96.5				4.9	49	41.8	10.2	"	
25	96.5-98.0				9.0	58	10.6	14.5	"	
26	98.0-99.5				6.6	12	12.7	16.2	"	
27	99.5-10901.0				3.7	11	16.7	12.3	"	
28	10901.0-02.5				5.6	49	12.7	12.7	"	
29	02.5-04.0				3.7	12	16.4	13.6	"	
30	04.0-05.5				7.6	19	14.3	6.8	"	
31	05.5-07.0				6.5	13	16.7	9.7	"	
32	07.0-08.5				6.1	12	12.7	14.3	"	
33	08.5-10.0				5.8	15	18.3	18.4	"	
34	10.0-11.5				5.7	11	12.4	14.3	"	
35	11.5-13.0				5.7	12	16.6	9.2	"	

ROTARY ENGINEERS LIMITED

CORE ANALYSIS TABULAR DATA

COMPANY Texas & Pacific Coal & Oil | WELL State B-1 | FIELD Bagley Sluro - Devonian

COUNTY Lea | STATE New Mexico | DATE 11-20-49 | ANALYST LCL, JS

FORMATION Devonian | TYPE ANALYSIS Special | JOB NO. L-65

REMARKS Analysis of entire core cut with diamond bit.

SAMPLE NUMBER	DEPTH	MATRIX POROSITY %	FRACTURED PORE %	TOTAL POROSITY %	EFFECTIVE POROSITY %	PERMEABILITY M D	TOTAL WATER SATURATION % P V	RESIDUAL OIL SATURATION % P V	PROBABLE PRODUCTION	REMARKS
1	10824-25.5				6.5	175	22.0	20.0	Oil	
2	25.5-27.0				3.8	5	33.4	16.4	"	
3	27.0-28.5				3.5	5	17.5	14.7	"	
4	28.5-30.0				4.5	10	17.5	14.3	"	
5	30.0-31.5				1.2	-.1	41.4	21.2	None	
6	31.5-33.0				0.4	-.1	55.4	12.4	"	
7	33.0-34.5				0.2	-.1	27.3	0.0	"	
8	34.5-36.0				0.2	-.1	35.2	0.0	"	
9	36.0-37.5				0.2	-.1	26.7	0.0	"	
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14	80.0-81.5				5.7	100	18.6	7.4	"	
15	81.5-83.0				6.0	55	16.7	8.9	"	
16	83.0-84.5				4.0	25	12.9	12.4	"	
17	84.5-86.0				7.4	110	22.6	16.3	"	
18	86.0-87.5				5.0	15	31.0	16.8	"	
19	81.5-89.0				11.5	130	14.7	18.7	"	
20	89.0-90.5				7.1	33	17.6	12.3	"	
21	90.5-92.0				3.4	13	29.7	4.7	"	
22	92.0-93.5				4.7	32	18.3	10.6	"	
23	93.5-95.0				5.8	12	19.7	7.8	"	
24	95.0-96.5				4.9	49	41.8	10.2	"	
25	96.5-98.0				9.0	58	10.6	14.9	"	
26	98.0-99.5				6.6	12	12.7	16.2	"	
27	99.5-10901.0				3.7	11	16.7	12.3	"	
28	10901.0-02.5				5.6	49	12.7	12.7	"	
29	02.5-04.0				3.7	12	16.4	13.6	"	
30	04.0-05.5				7.6	19	14.3	6.8	"	
31	05.5-07.0				6.5	13	16.7	9.7	"	
32	07.0-08.5				6.1	12	12.7	14.3	"	
33	08.5-10.0				5.8	15	18.3	18.4	"	
34	10.0-11.5				5.7	11	12.4	14.3	"	
35	11.5-13.0				5.7	12	16.6	9.2	"	

ROTARY ENGINEERING AND MANUFACTURING CO., INC.
DRILLING ENGINEERS
BOX 1007
MIDLAND, TEXAS

November 25, 1949

Texas & Pacific Coal & Oil Co.
601 West Missouri Street
Midland, Texas

Attention: Mr. O. R. Carter.

Gentlemen:

We are submitting to you eight (8) copies of our core analysis in both tabular and graphic forms on your State B No.1 well, Bagley-Sluro-Devonian Field in Lea County, New Mexico. These cores having been analyzed for porosity, permeability and fluid saturation as percent pore space occupied.

The porosities were obtained by resaturating eighteen (18) inch sections of the core, starting with vacuum and goinf to 1000 pounds applied pressure. The total volume of fluid injected was assumed to be the effective pore space. Volume, time and pressure measurements were made at 12 different intervals during the resaturation of each sample and the permeability was computed from these measurements. Thus the permeability measurements are non directional.

Curves are submitted showing resaturation characteristics of each sample.

Fluid saturation as percent pore space is believed to be unreliable due to the vuglar nature of the formation.

We wish to thank you for the consideration and cooperation shown us and our personnel in securing the information on this well.

Yours very truly,

ROTARY ENG. & MFG. CO., INC.

L. C. Locke

L. C. Locke

LCL:mp
Enclosure

ROTARY ENGINEERS LIMITED

CORE ANALYSIS TABULAR DATA

COMPANY Texas & Pacific Coal & Oil | WELL State B-1 | FIELD Bagley Sluro - Devonian

COUNTY Lea | STATE New Mexico | DATE 11-20-49 | ANALYST LCL, M

FORMATION Devonian | TYPE ANALYSIS Special | JOB NO. L45

REMARKS Analysis of entire core cut with diamond bit.

SAMPLE NUMBER	DEPTH	MATRIX POROSITY %	FRACTURED PORE %	TOTAL POROSITY %	EFFECTIVE POROSITY %	PERMEABILITY M D	TOTAL WATER SATURATION % P V	RESIDUAL OIL SATURATION % P V	PROBABLE PRODUCTION	REMARKS
1	10824-25.5				6.5	175	22.0	20.0	Oil	
2	25.5-27.0				3.8	5	33.4	16.4	"	
3	27.0-28.5				3.5	5	17.5	14.7	"	
4	28.5-30.0				4.5	10	17.5	14.3	"	
5	30.0-31.5				1.2	-.1	41.4	21.2	None	
6	31.5-33.0				0.4	-.1	55.4	12.4	"	
7	33.0-34.5				0.2	-.1	27.3	0.0	"	
8	34.5-36.0				0.2	-.1	35.2	0.0	"	
9	36.0-37.5				0.2	-.1	26.7	0.0	"	
10	10874.0-75.5				2.0	4	27.5	8.4	Oil	
11	75.5-77.0				2.6	4	36.4	4.3	"	
12	77.0-78.6				2.2	5	42.7	9.7	"	
13	78.5-80.0				4.0	40	21.3	16.8	"	
14	80.0-81.5				5.7	100	18.6	7.4	"	
15	81.5-83.0				6.0	55	16.7	8.9	"	
16	83.0-84.5				4.0	25	12.9	12.4	"	
17	84.5-86.0				7.4	110	22.6	16.3	"	
18	86.0-87.5				5.0	15	31.0	16.8	"	
19	81.5-89.0				11.5	130	14.7	18.7	"	
20	89.0-90.5				7.1	33	17.6	12.3	"	
21	90.5-92.0				3.4	13	29.7	4.7	"	
22	92.0-93.5				4.7	32	18.3	10.6	"	
23	93.5-95.0				5.8	12	19.7	7.8	"	
24	95.0-96.5				4.9	49	41.8	10.2	"	
25	96.5-98.0				9.0	58	10.6	14.3	"	
26	98.0-99.5				6.6	12	12.7	16.2	"	
27	99.5-10901.0				3.7	11	16.7	12.3	"	
28	10901.0-02.5				5.6	49	12.7	12.7	"	
29	02.5-04.0				3.7	12	16.4	13.6	"	
30	04.0-05.5				7.6	19	14.3	6.8	"	
31	05.5-07.0				6.5	13	16.7	9.7	"	
32	07.0-08.5				6.1	12	12.7	14.3	"	
33	08.5-10.0				5.8	15	18.3	18.4	"	
34	10.0-11.5				5.7	11	12.4	14.3	"	
35	11.5-13.0				5.7	12	16.6	9.2	"	

ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

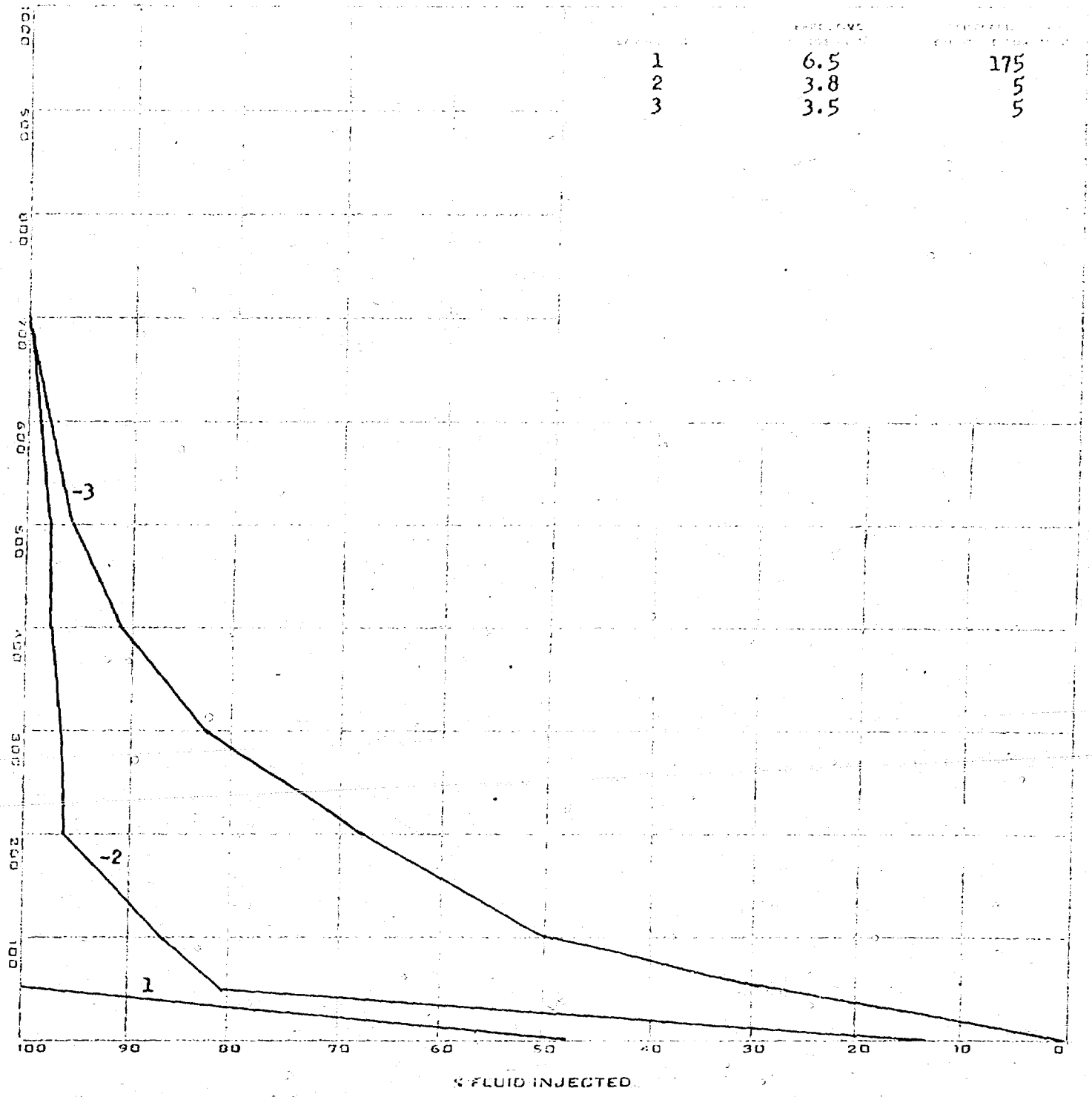
COMPANY TEXAS & PACIFIC COAL & OIL PAGE 1

WELL State B #1 JOB NO. L-65

COUNTY Lea County, ANALYST JS, LCL

STATE New Mexico

1	6.5	175
2	3.8	5
3	3.5	5



HOWARD-MIDLAND

ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

PAGE 2

WELL State B #1

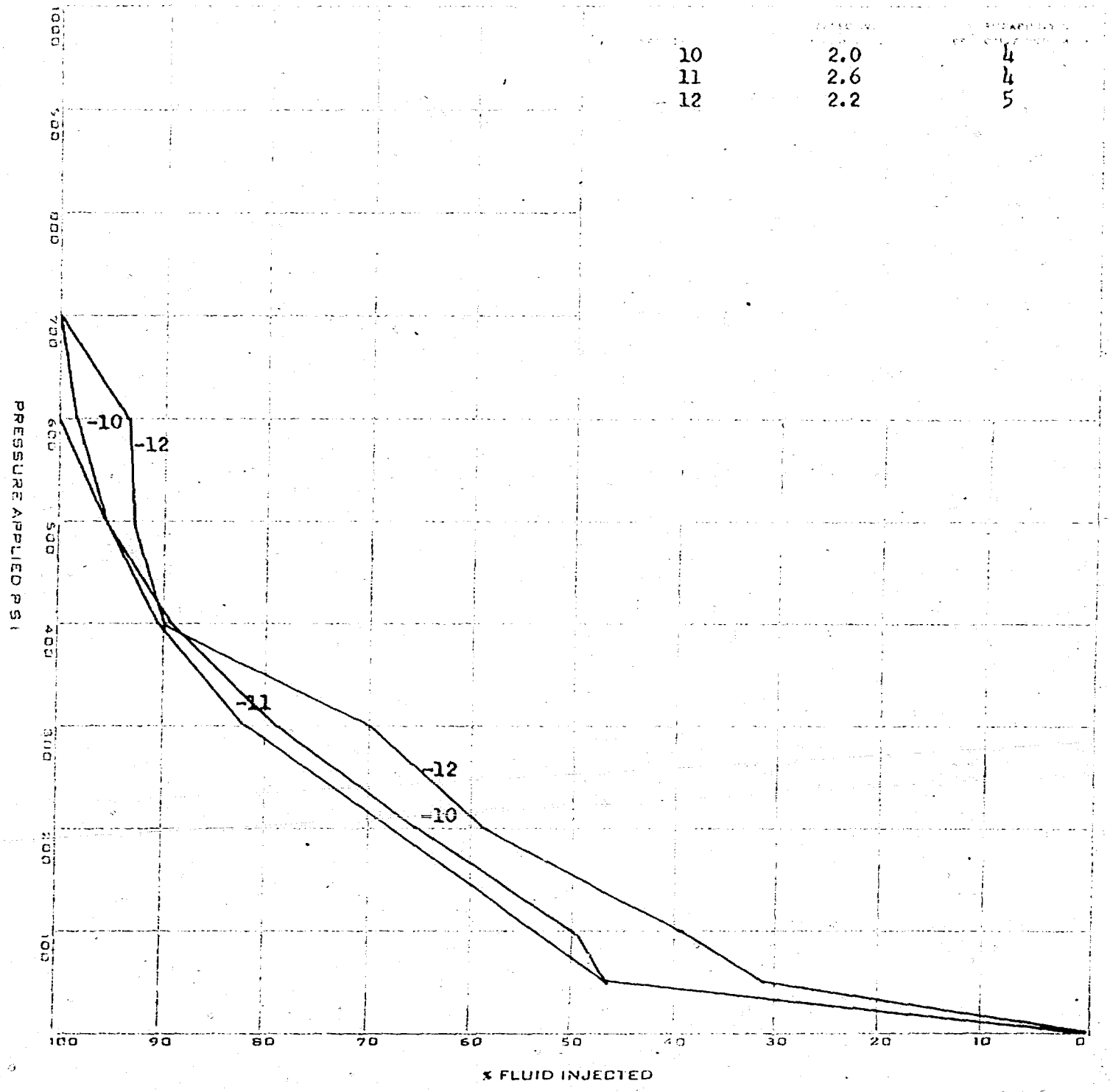
JOB NO. L-65

COUNTY Lea

ANALYST JS, LCL

STATE New Mexico

10	2.0	4
11	2.6	4
12	2.2	5



HOWARD-MIDLAND

ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

COUNTY Lea

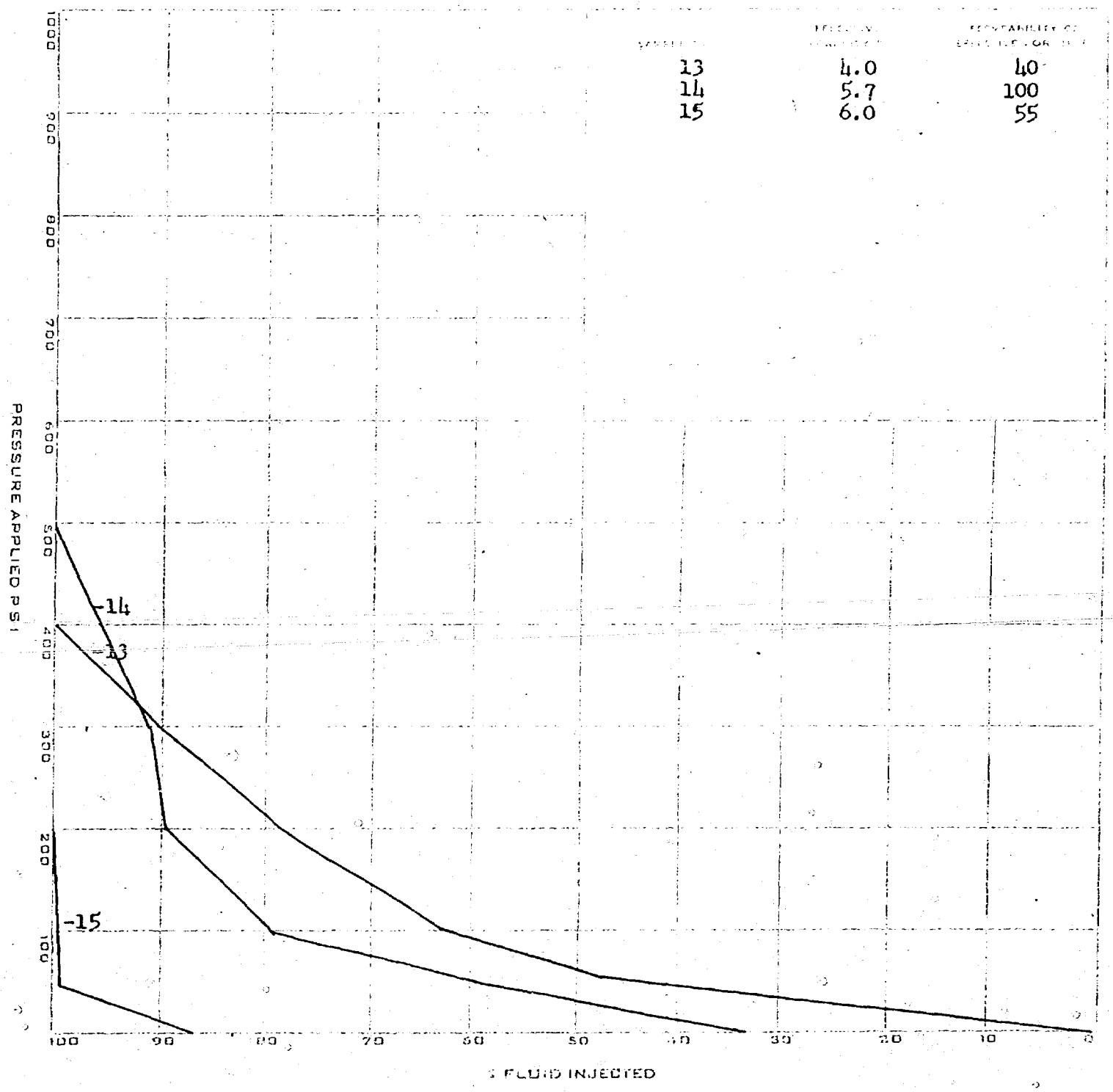
STATE New Mexico

PAGE 3

JOB NO. L-65

ANALYST JS, LCL

SAMPLE #	PERMEABILITY MILLIDARCYS	PERCENTABILITY OF SAMPLE FLOW OR %
13	4.0	40
14	5.7	100
15	6.0	55



ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

COUNTY Lea

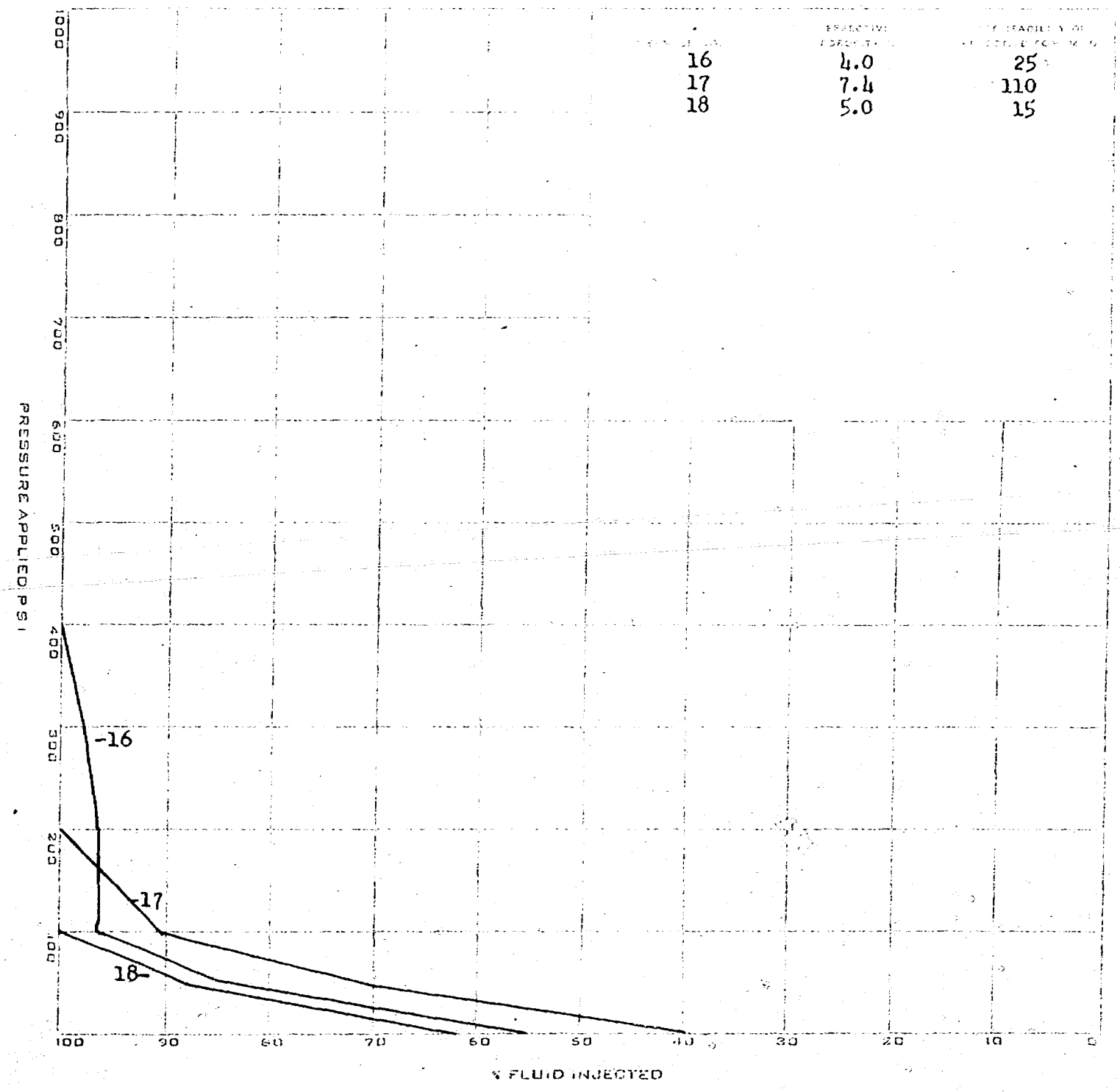
STATE New Mexico

PAGE 4

JOB NO. L-65

ANALYST JS,LCL

16	4.0	25
17	7.4	110
18	5.0	15



ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

COUNTY Lea

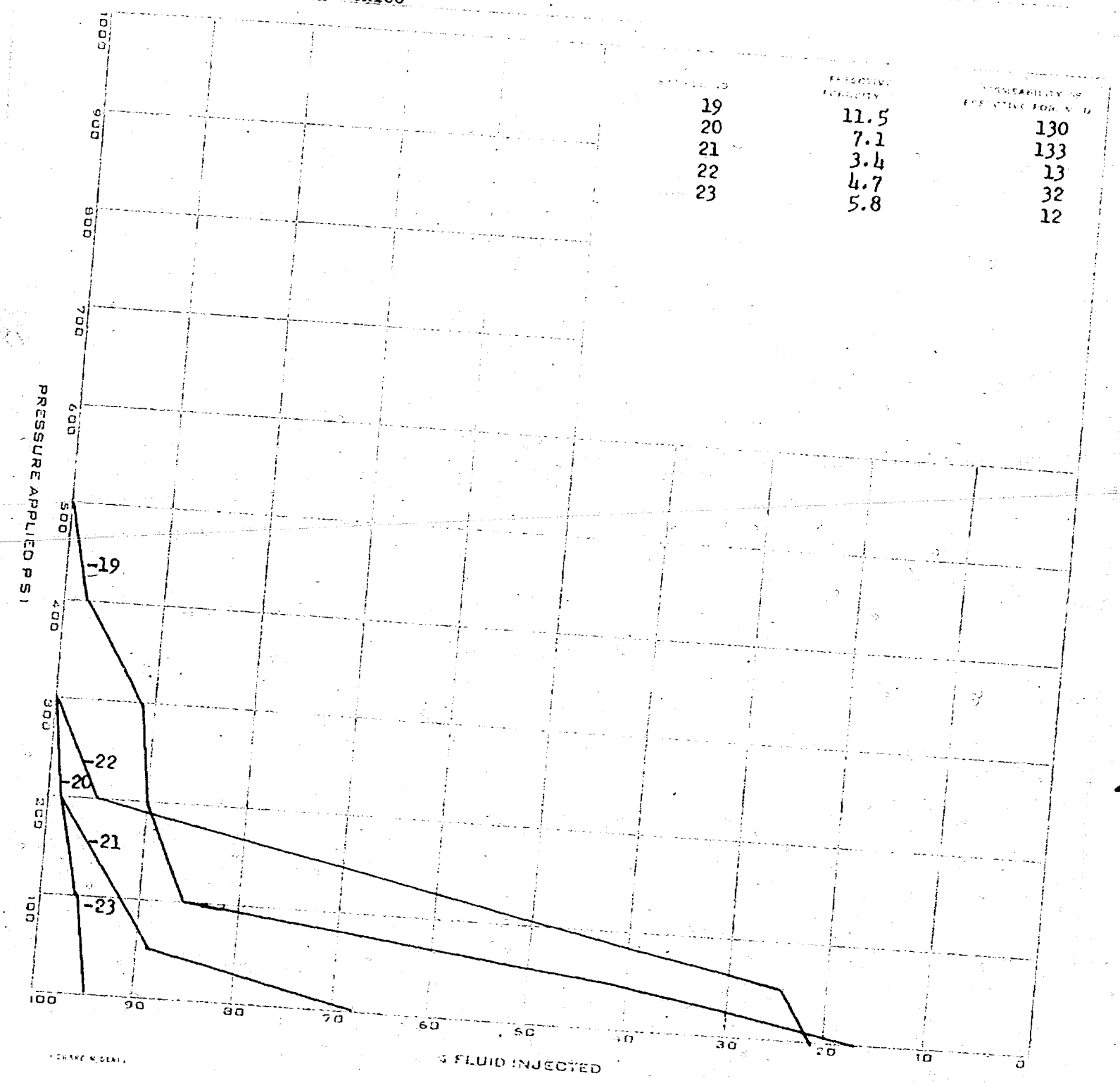
STATE New Mexico

PAGE 5

JOB NO. L-65

ANALYST JS, LCL

19	11.5	130
20	7.1	133
21	3.4	13
22	4.7	32
23	5.8	12



ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

COUNTY Lea

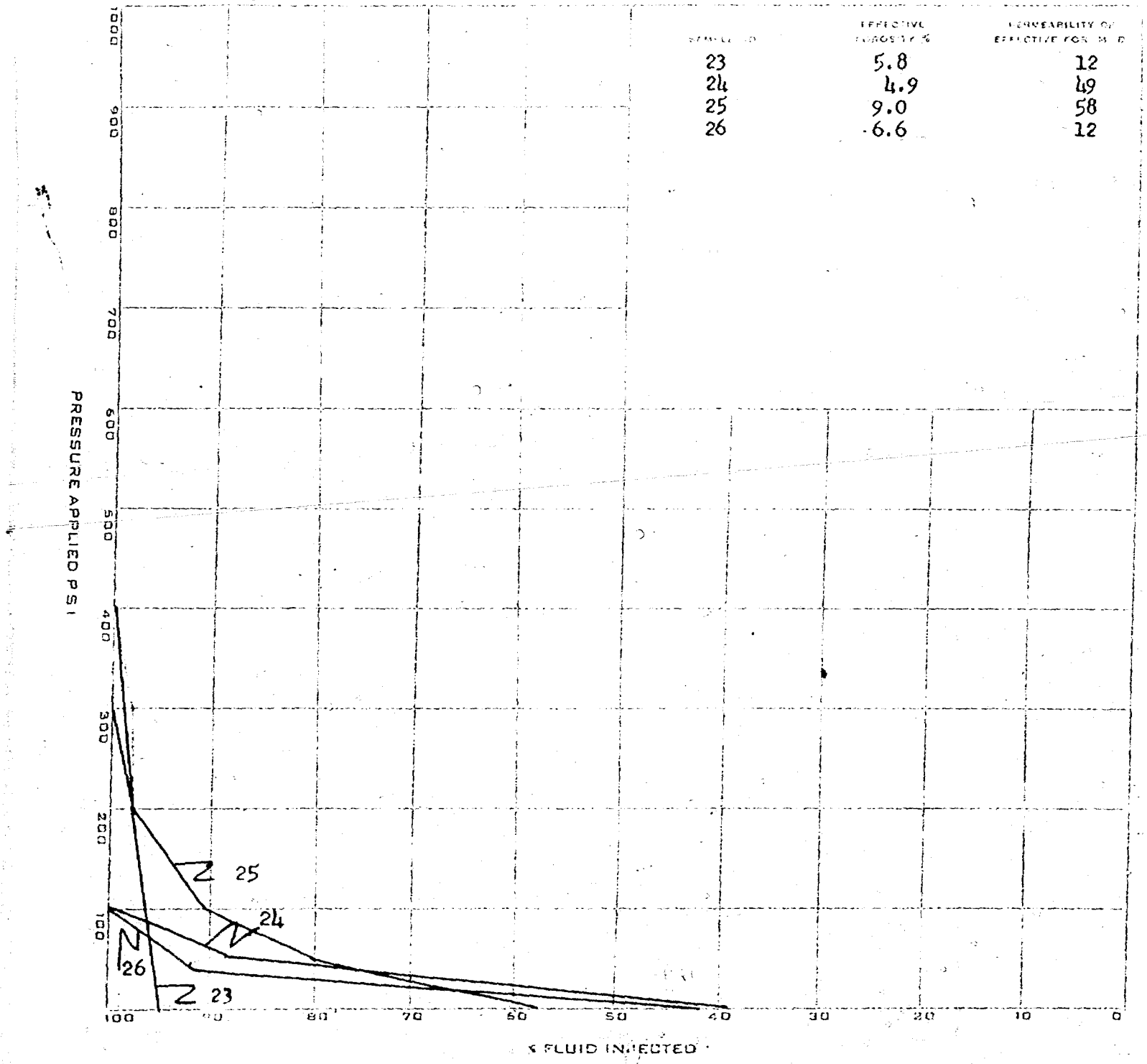
STATE New Mexico

PAGE 6

JOB NO. L-65

ANALYST JS, LCL

SAMPLE NO.	EFFECTIVE POROSITY %	PERMEABILITY @ EFFECTIVE POR. % D
23	5.8	12
24	4.9	49
25	9.0	58
26	6.6	12



HOWARD WILLIAMS

ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

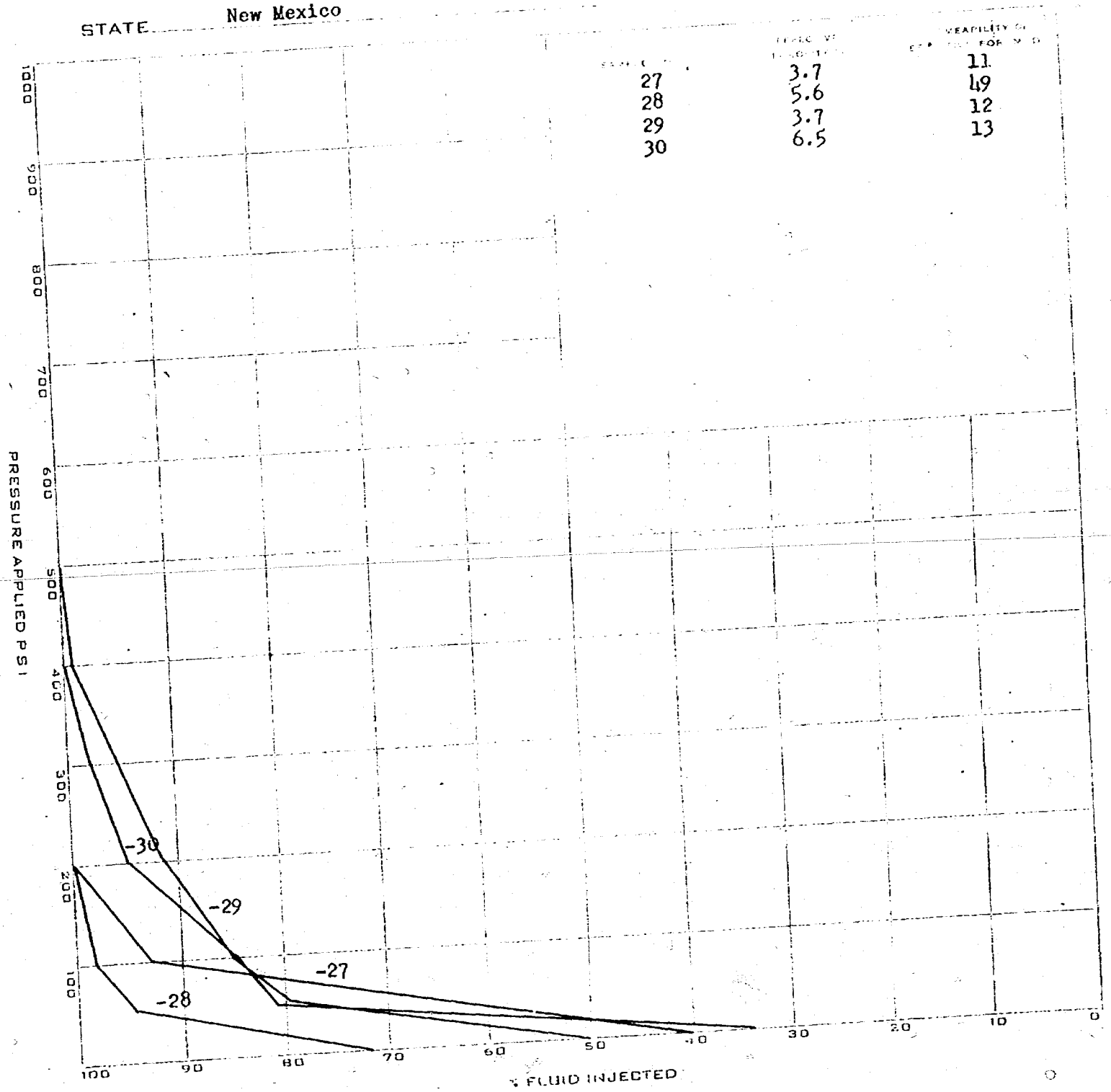
COUNTY Lea

STATE New Mexico

JOB NO. L-65

ANALYST JS, LCL

27	3.7	11
28	5.6	49
29	3.7	12
30	6.5	13



ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

PAGE 8

WELL State B #1

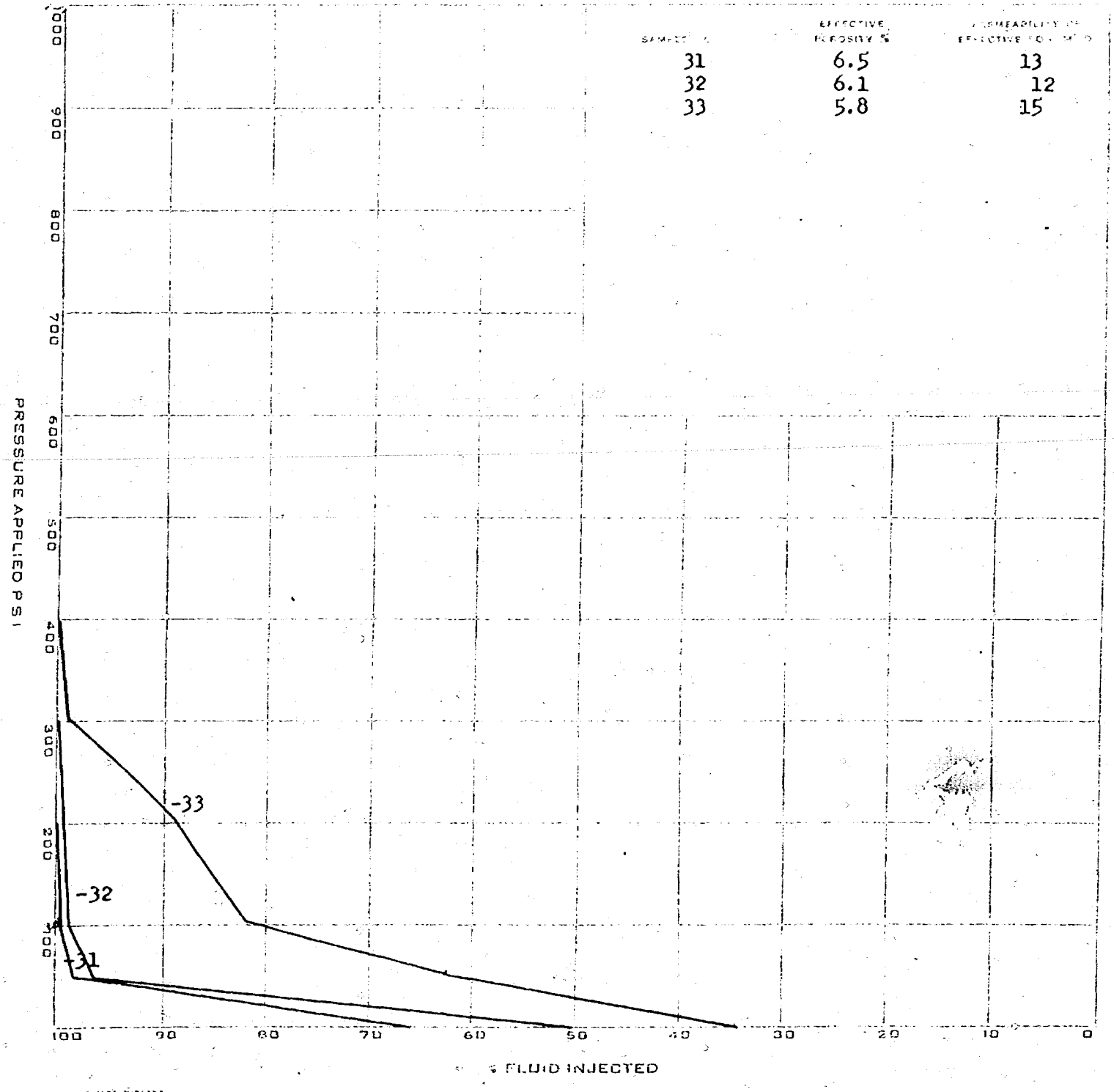
JOB NO. L-65

COUNTY Lea

ANALYST JS, LCL

STATE New Mexico

SAMPLE #	EFFECTIVE POROSITY %	PERMEABILITY MD EFFECTIVE TO AIR
31	6.5	13
32	6.1	12
33	5.8	15



ROTARY ENGINEERING & MANUFACTURING CO.

CORE ANALYSIS GRAPHIC DATA

COMPANY TEXAS & PACIFIC COAL & OIL

WELL State B #1

COUNTY Lea

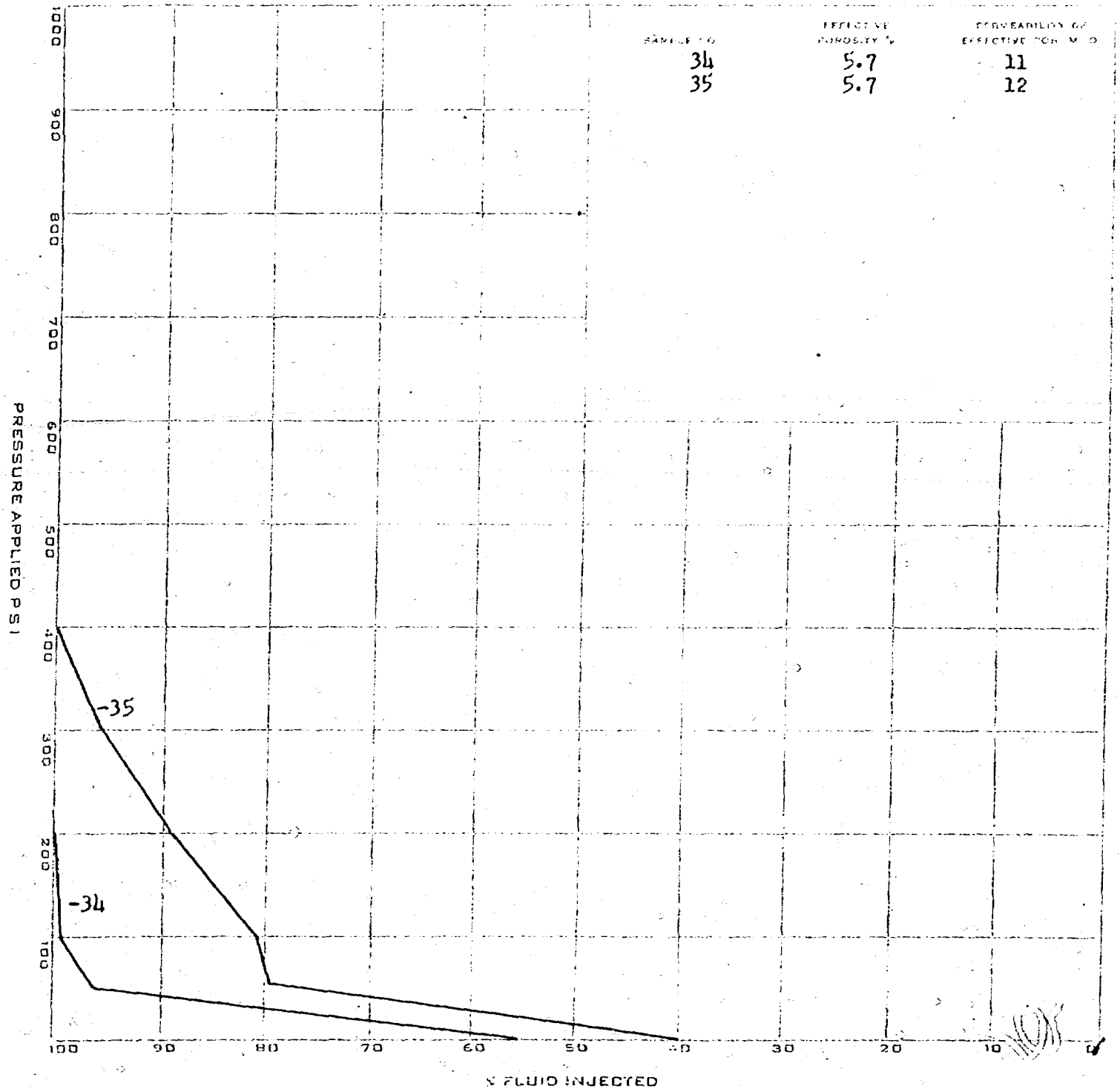
STATE New Mexico

PAGE 9

JOB NO. L-65

ANALYST JS, LCL

SAMPLE NO	EFFECTIVE POROSITY %	PERMEABILITY MD EFFECTIVE POR. M. D.
34	5.7	11
35	5.7	12



EDWARD-MIDLAND

ROTARY ENGINEERING & MFG. CO., INC.

CORE ANALYSIS WELL LOGGING SERVICE WATER ANALYSIS

COREGRAPH

COMPANY TEXAS PACIFIC COAL & OIL
WELL STATE B-1
FIELD BAGLEY SILURO - DEVONIAN
COUNTY LEA
STATE NEW MEXICO

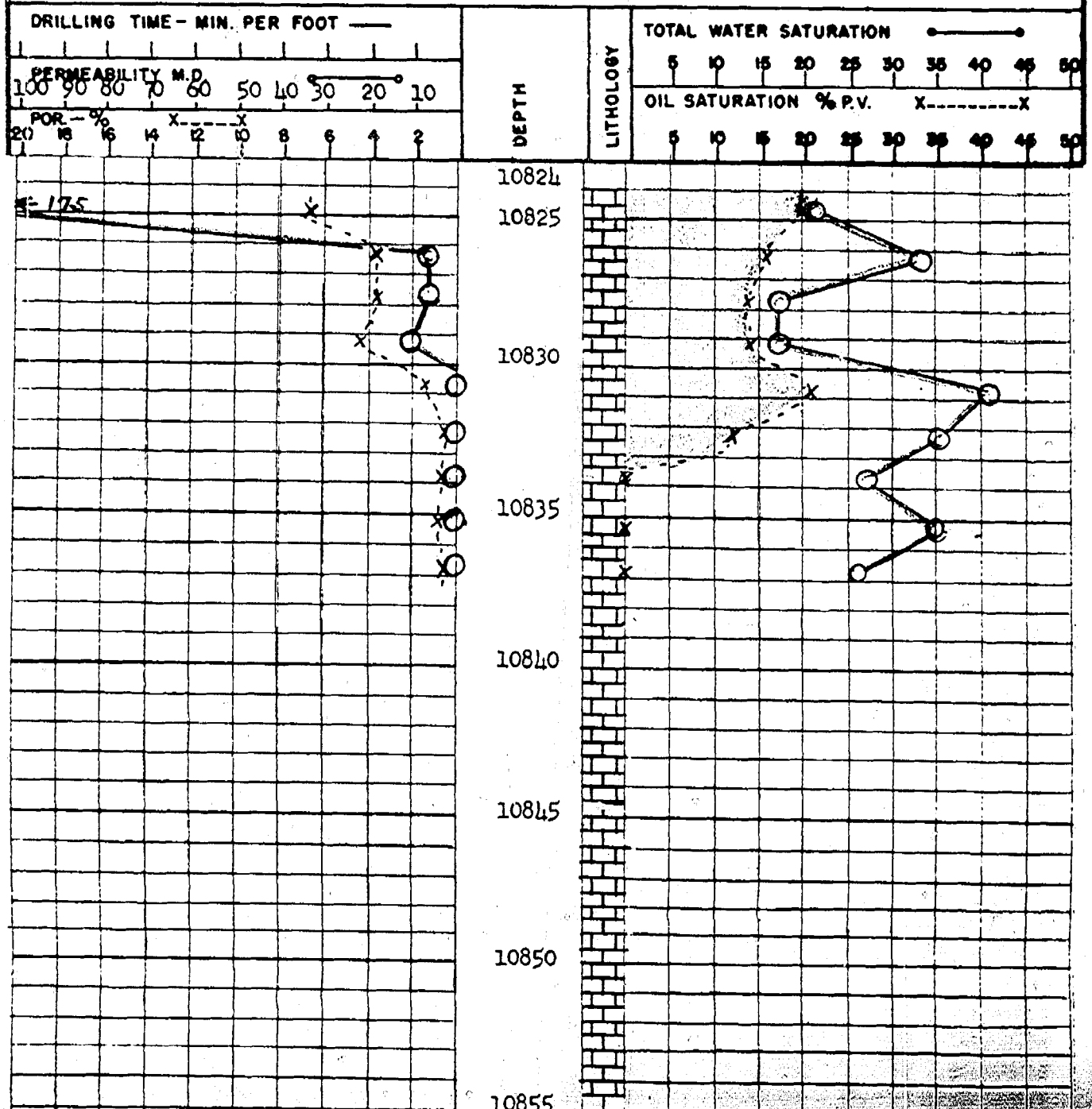
DEPTH FROM 10824 TO 10914
DATE 11-20-49
ANALYST J.S., L.C.L.

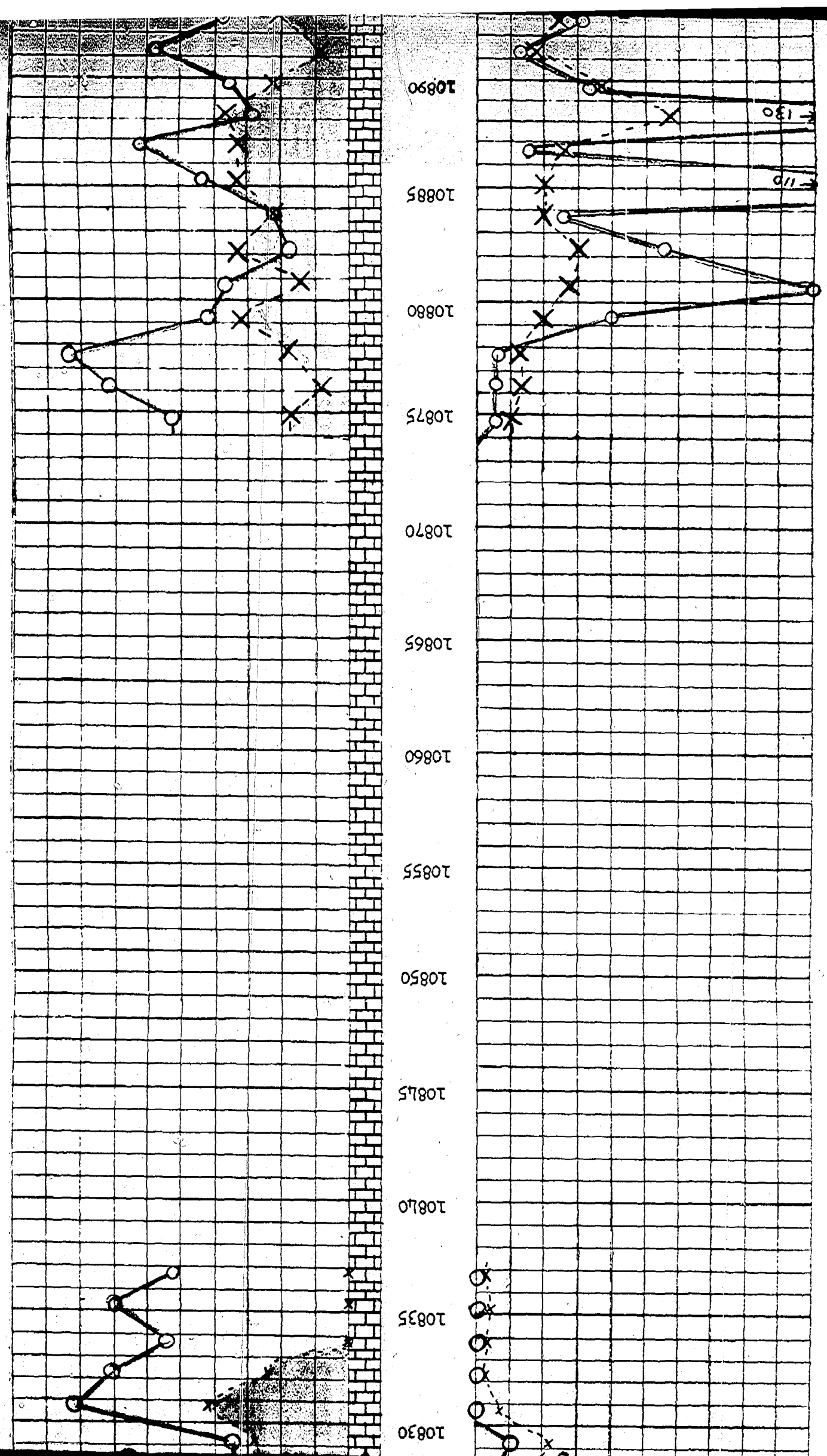
REMARKS

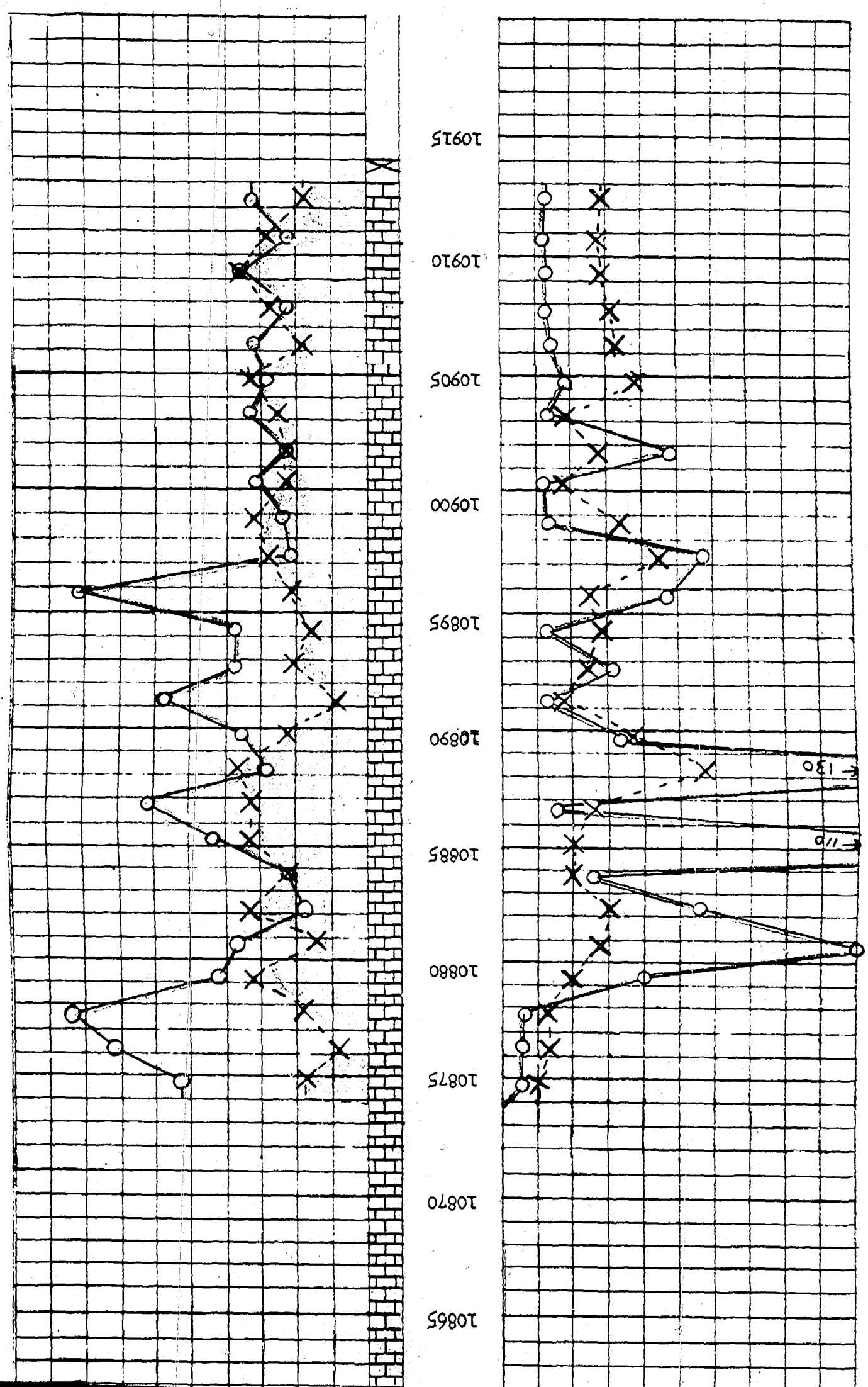
TYPE CORE BARREL DIAMOND

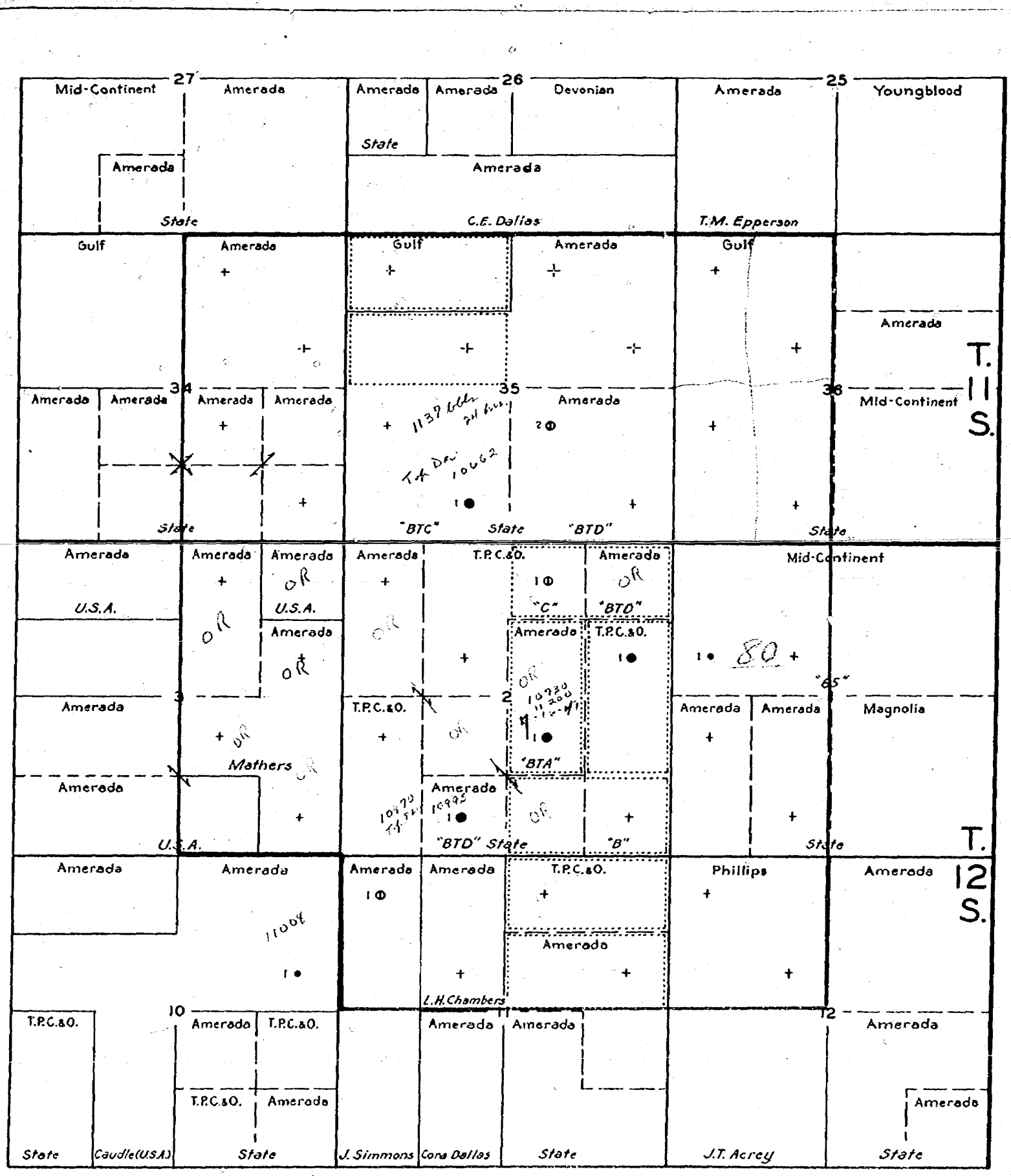
ELEVATION

- SANDSTONE
- LIMESTONE
- DOLOMITE
- SHALE
- CHERT
- ANHYDRITE - GYP
- COAL
- LOST CORE




10890
10885
10880
10875
10870
10865
10860
10855
10850
10845
10840
10835
10830
130
110


10915
10910
10905
10900
10895
10890
10885
10880
10875
10870
10865
130
110



R. 33 E.

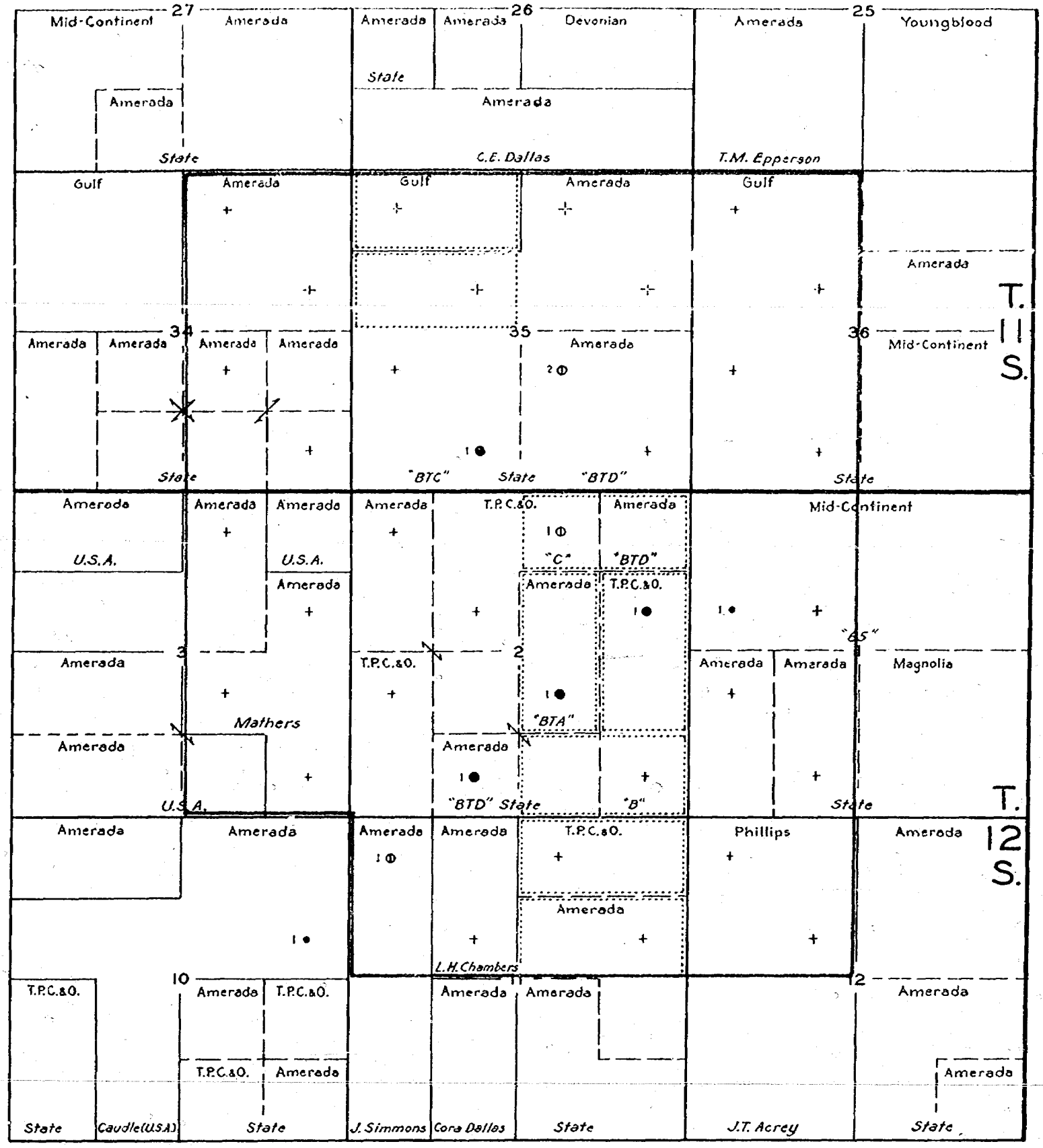
BAGLEY FIELD

LEA COUNTY NEW MEXICO

- BAGLEY - SILURO-DEVONIAN POOL WELLS
- BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION

DECEMBER 20, 1949



R. 33 E.

BAGLEY FIELD

LEA COUNTY NEW MEXICO

● BAGLEY - SILURO-DEVONIAN POOL WELLS
• BAGLEY - PENNSYLVANIAN POOL WELLS

APPLICATION AMERADA PETROLEUM CORPORATION
DECEMBER 20, 1949

"EXHIBIT A"

N. M. 248

Form 44--DUPLICATE

LEASE NO. B-11446 SEP 1[illegible] '44 APPLICATION NO. B-11446

OIL AND GAS LEASE

THIS AGREEMENT, dated this the 11th day of September, A. D. 1944, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor," and Texas Pacific Coal and Oil Company

Box 2110, Ft. Worth, Texas

party of the second part, hereinafter called the "Lessee," whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of Public Lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

WHEREAS, all of the requirements of law relative to said application and tender have been duly complied with and said application has been approved and allowed by the Commissioner of Public Lands:

THEREFORE, for and in consideration of the premises as well as the sum of Nine hundred five and 88/100 - ($ 905.88) Dollars, the same being the amount of the tender above mentioned, paid in cash, and evidenced by official receipt No. A 43809, and of the further sum of $ 5.00 filing fee, and of the covenants and agreements hereinafter contained on the part of the lessee to be paid, kept and performed, the said lessor has granted and demised, leased and let, and by these presents does grant, demise, lease and let unto the said lesse, exclusively, for the sole and only purpose of exploration, development and production of oil and/or gas thereon and therefrom with the right to own all oil and gas so produced and saved therefrom and not reserved as royalty by the lessor under the terms of this lease, together with rights of way, easements and servitudes for pipe lines, telephone and telegraph lines, tanks, power houses, stations, gasoline plants, and fixtures for producing, treating and caring for such products, and housing and boarding employees, and any and all rights and privileges necessary, incident to or convenient for the economical operation of said land, for oil and gas, with right for such purposes to the free use of oil, gas, casing-head gas, or water from said lands, but not from lessor's water wells, and with the right of removing either during or after the term hereof, all and any improvements placed or erected on the premises by the lessee, including the right to pull all casing, subject, however, to the conditions hereinafter set out, the following described land situate in the County of Lea State of New Mexico, and more particularly described as follows:

Line	Institution	Sec.	Twp.	Range	SUBDIVISION Column 1	Column 2	Column 3	Column 4	Acres
1	C.S.	2	12S	33E				S½S½	40.00
2	"	7	12S	33E	N½SE¼			S½S½	80.00
3	"	29	12S	33E			S½SE¼		40.00
4	"	32	12S	33E	NE¼NW¼	N½N½	S½NW¼		120.00
5	"	"	"	"	NE¼SW¼			SE¼SW¼	80.00
6									360.00
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

said lands having been awarded to lessee and designated as tract No. 21 at a public sale held by the Commissioner of Public Lands on September 11, 19 44. (To be filled in only where lands are offered at public sale.)

TO HAVE AND TO HOLD said land, and all the rights and privileges granted hereunder, to and unto the lessee for a primary term of 5 years from the date hereof, and as long thereafter as oil and gas in paying quantities, or either of them, is produced from said land by the lessee, subject to all the terms and conditions as hereinafter set forth.

In consideration of the premises the parties covenant and agree as follows:

1. Subject to the free use without royalty, as hereinbefore provided, the lessee shall pay the lessor as royalty one-eighth part of the oil produced and saved from the leased premises, or the cash value thereof, at the option of the lessor, such value to be the price prevailing the day oil is run into a pipe line, if the oil be run into a pipe line, or into storage tanks, if the oil be stored.

2. The lessee agrees to pay the lessor the one-eighth of the net proceeds derived from the sale of gas from each gas well. If casing-head gas produced from said land is sold by the lessee, the lessee shall pay the lessor as royalty one-eighth of the net proceeds of said sale; if casing-head gas produced from said land is utilized by the lessee otherwise than for carrying on the lessee's operations for producing oil or gas from said lands, then the lessee shall pay the lessor the market value in the field of the equal one-eighth part of the casing-head gas so utilized at the time of such utilization.

3. Lessee agrees to make full settlement on the 20th day of each month for all royalties due the lessor for the preceding month, under this lease, and to permit the lessor or its agents, at all reasonable hours, to examine lessee's books relating to the production and disposition of oil and gas produced. The lessee further agrees to submit to the lessor, for each and every royalty payment, a correct statement showing the amount of oil and gas produced and saved since his last report and the market value thereof. Lessee further agrees to submit to lessor annually upon forms furnished by lessor, verified reports showing lessee's operations for the preceding year.

4. It is expressly agreed that the consideration hereinbefore specified is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to prevent the terminaion of this lease from year to year, by the payment or tender of the further rental hereinafter provided for.

An annual rental, at the rate of 2.5¢ per acre shall also become due and payable to the lessor by the lessee, or by any transferee or assignee of the same, or any part hereof, where such transferee or assignee has been recognized and such transfer or assignment approved by the lessor as hereinafter provided, upon each acre of land above described and then claimed by such lessee, transferee or assignee hereunder, and the same shall be due and payable in advance to the lessor on the successive anniversary dates of this lease, but the annual rental on any assignment shall in no event be less than Six Dollars ($6.00).

In event the lessee shall elect to surrender any or all of said acreage, he shall deliver to the Commissioner a duly executed release thereof and in event said lease has been recorded, then he shall upon request furnish and deliver to said Commissioner a certified copy of a duly recorded release.

5. The lessee may at any time by paying to the State of New Mexico, acting by its Commissioner of Public Lands, or other authorized officer, all amounts then due as provided herein and the further sum of Ten Dollars ($10.00), surrender and cancel this lease insofar as the same covers all or any portion of the lands herein leased and be relieved from further obligations or liability hereunder, in the manner as hereinbefore provided. Provided, this surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law or equity by the lessee, lessor or any assignee, to enforce this lease, or any of its terms express or implied.

6. All payments due hereunder shall be made on or before the day such payment is due, in cash or by certified exchange at the Office of the Commissioner of Public Lands in Santa Fe, New Mexico.

7. The lessee with the consent of the lessor, shall have the right to assign this lease in whole or in part. Provided, however, that no assignment of any undivided interest in the lease or any part thereof nor any assignment of less than a legal subdivision shall be recognized or approved by the lessor. Upon approval in writing by the lessor of an assignment, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment and the lessor shall likewise be relieved from all obligations to the assignor as to such tracts and the assignee shall succeed to all of the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

8. Lessee agrees, with reasonable diligence to offset all paying oil or gas wells drilled, within 300 feet of any of the land covered by this lease and retained hereunder.

9. The lessee agrees to notify the lessor of the location of each well before commencing drilling thereon, to keep a complete and accurate log of each well drilled and to furnish a copy thereof, verified by some person having actual knowledge of the facts, to the lessor upon the completion of any well, and to furnish the log of any unfinished well at any time when requested to do so by the lessor. If any lands embraced in this lease shall be included in any deed or contract of purchase outstanding and subsisting issued pursuant to any sale made of the surface of such lands prior to the date of this lease, it is agreed and understood that no drilling operations shall be commenced on any such lands so sold unless and until the lessee or his assignee shall have filed a good and sufficient bond with the lessor as required by law, to secure the payment for such damage to the livestock, range, water, crops or tangible improvements on such lands as may be suffered by the purchaser holding such deed or contract of purchase, or his successors by reason of the developments, use and occupation of such lands by such lessee. Provided, however, that no such bond shall be required if such purchaser shall waive the right to require such bond to be given in the manner provided by law.

10. In drilling wells all water-bearing strata shall be noted in the log, and the lessor reserves the right to require that all or any part of the casing shall be left in any non-productive well when lessor deems it to the interest of the State of New Mexico to maintain said well or wells for water. For such casing so let in wells the lessor shall pay the lessee the reasonable value thereof.

11. Lessee shall be liable and agrees to pay for all damages to the range, livestock, growing crops or improvements caused by lessee's operations on said lands. When requested by the lessor, the lessee shall bury pipelines below plow depth.

12. The lessee shall not remove any machinery or fixtures placed on said premises, nor draw the casing from any well unless and until all payments and obligations due the lessor under the terms of this agreement shall have been paid or satisfied. The lesse's right to remove the casing is subject to the provision of paragraph 10 above.

13. Upon failure or default of the lessee or any assignee to comply with any of the provisions or convenants hereof, the lessor is hereby authorized to cancel this lease and such cancellation shall extend to and include all rights hereunder as to the whole of the tract so claimed, or possessed by the lessee or assignee so defaulting, but shall not extend to, nor affect the rights of any other lessee or assignee claiming any portion of

the lands upon which no default has been made; provided however, that before any such cancellation shall be made, the lessor shall mail to the lessee or assignee so defaulting, by registered mail addressed to the post-office address of such lessee or assignee as shown by the records of the State Land Office, a notice of intention of cancellation specifying the default for which cancellation is to be made, and if within 30 days from the date of mailing said notice the said lessee or assignee shall remedy the default specified in said notice, cancellation shall not be made.

14. All the terms of this agreement shall extend to and bind the heirs, executors, administrators, successors and assigns of the parties hereto.

15. If the lessee shall have failed to make discovery of oil and/or gas in paying quantities during the primary term hereof, the lessee may continue this lease in full force and effect for an additional term of five years and as long thereafter as oil and gas in paying quantities, or either of them is produced from the leased premises, by paying each year in advance, as herein provided, double the rental provided herein for the primary term, or the highest rental prevailing at the commencement of the secondary term in any rental district, or districts in which the lands or any part thereof, may be situated, if it be greater than double the rental provided for the primary term. (This paragrah (15) shall not be inserted in any lease issued pursuant to the provisions of Section 3 (132-403) of this Act.)

IN WITNESS WHEREOF; the party of the first part has hereunto signed and caused its name to be signed by its Commissioner of Public Lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement the day and year first above written.

STATE OF NEW MEXICO

By H. R. Rodgers

COMMISSIONER OF PUBLIC LANDS, Lessor.

ATTEST:

(R. Selbel) Secretary

TEXAS PACIFIC COAL AND OIL COMPANY

By .....

Lessee, Vice-President (SEAL)

Distributed this the 1st day of Oct., 19 44

(PERSONAL ACKNOWLEDGMENT)

[redacted] ss.

.....day of....., 19....., personally appeared before me

.....

[redacted] to be the person..... who executed the foregoing instrument as Lessee, and acknowledged that ..... executed the same as.....free act and deed.

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGED BY ATTORNEY IN FACT)

STATE OF.....
COUNTY OF..... ss.

On this the.....day of....., 19....., personally appeared before me .....

to me known to be the person.....who executed the foregoing instrument in behalf of.....

.....

and acknowledged that.....he.....executed the same as the free act and deed of said.....

.....

.....

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGMENT BY CORPORATION)

STATE OF TEXAS
COUNTY OF TARRANT ss.

On this the 18th day of September, 1944, personally appeared

C. E. Yager

to me personally known, who being by me duly sworn did say that he is the Vice-President of TEXAS PACIFIC COAL AND OIL COMPANY and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said

C. E. Yager

acknowledges said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

E. J. Robbins

(E. J. Robbins) Notary Public.
Tarrant County, Texas

My Commission Expires:
June 1, 1945

N. M. 248

Form 44—DUPLICATE

LEASE NO. B-11446 SEP 1 [illegible] '44 APPLICATION NO. B-11446

OIL AND GAS LEASE

THIS AGREEMENT, dated this the 11th day of September, A. D. 1944, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor," and Texas Pacific Coal and Oil Company
Box 2110, Ft. Worth, Texas
party of the second part, hereinafter called the "Lessee," whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of Public Lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

WHEREAS, all of the requirements of law relative to said application and tender have been duly complied with and said application has been approved and allowed by the Commissioner of Public Lands:

THEREFORE, for and in consideration of the premises as well as the sum of Nine hundred five and 88/100 - ($ 905.88) Dollars, the same being the amount of the tender above mentioned, paid in cash, and evidenced by official receipt No. A 63809, and of the further sum of $ 5.00 filing fee, and of the covenants and agreements hereinafter contained on the part of the lessee to be paid, kept and performed, the said lessor has granted and demised, leased and let, and by these presents does grant, demise, lease and let unto the said lesse, exclusively, for the sole and only purpose of exploration, development and production of oil and/or gas thereon and therefrom with the right to own all oil and gas so produced and saved therefrom and not reserved as royalty by the lessor under the terms of this lease, together with rights of way, easements and servitudes for pipe lines, telephone and telegraph lines, tanks, power houses, stations, gasoline plants, and fixtures for producing, treating and caring for such products, and housing and boarding employees, and any and all rights and privileges necessary, incident to or convenient for the economical operation of said land, for oil and gas, with right for such purposes to the free use of oil, gas, casing-head gas, or water from said lands, but not from lessor's water wells, and with the right of removing either during or after the term hereof, all and any improvements placed or erected on the premises by the lessee, including the right to pull all casing, subject, however, to the conditions hereinafter set out, the following described land situate in the County of Lea State of New Mexico, and more particularly described as follows:

	Line	Institution	Sec.	Twp.	Range	SUBDIVISION Column 1	Column 2	Column 3	Column 4	Acres
	1	C.S.	2	12S	33E				S½S½	40.00
	2	"	7	12S	33E	NE¼SE¼			S½S½	80.00
	3	"	29	12S	33E			SE¼SE¼		40.00
	4	"	32	12S	33E	NE¼NW¼	N½N½	SW¼NW¼		120.00
	5	"	"	"	"	NW¼SW¼			SE¼SW¼	80.00
	6									360.00
	7									
	8									
	9									
	10									
	11									
	12									
	13									
	14									
	15									
	16									
	17									
	18									
	19									
	20									

said lands having been awarded to lessee and designated as tract No. 21 at a public sale held by the Commissioner of Public Lands on September 11, 19 44. (To be filled in only where lands are offered at public sale.)

TO HAVE AND TO HOLD said land, and all the rights and privileges granted hereunder, to and unto the lessee for a primary term of 5 years from the date hereof, and as long thereafter as oil and gas in paying quantities, or either of them, is produced from said land by the lessee, subject to all the terms and conditions as hereinafter set forth.

In consideration of the premises the parties covenant and agree as follows:

1. Subject to the free use without royalty, as hereinbefore provided, the lessee shall pay the lessor as royalty one-eighth part of the oil produced and saved from the leased premises, or the cash value thereof, at the option of the lessor, such value to be the price prevailing the day oil is run into a pipe line, if the oil be run into a pipe line, or into storage tanks, if the oil be stored.

2. The lessee agrees to pay the lessor the one-eighth of the net proceeds derived from the sale of gas from each gas well. If casing-head gas produced from said land is sold by the lessee, the lessee shall pay the lessor as royalty one-eighth of the net proceeds of said sale; if casing-head gas produced from said land is utilized by the lessee otherwise than for carrying on the lessee's operations for producing oil or gas from said lands, then the lessee shall pay the lessor the market value in the field of the equal one-eighth part of the casing-head gas so utilized at the time of such utilization.

3. Lessee agrees to make full settlement on the 20th day of each month for all royalties due the lessor for the preceding month, under this lease, and to permit the lessor or its agents, at all reasonable hours, to examine lessee's books relating to the production and disposition of oil and gas produced. The lessee further agrees to submit to the lessor, for each and every royalty payment, a correct statement showing the amount of oil and gas produced and saved since his last report and the market value thereof. Lessee further agrees to submit to lessor annually upon forms furnished by lessor, verified reports showing lessee's operations for the preceding year.

4. It is expressly agreed that the consideration hereinbefore specified is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to prevent the terminaion of this lease from year to year, by the payment or tender of the further rental hereinafter provided for.

An annual rental, at the rate of 25¢ per acre shall also become due and payable to the lessor by the lessee, or by any transferee or assignee of the same, or any part hereof, where such transferee or assignee has been recognized and such transfer or assignment approved by the lessor as hereinafter provided, upon each acre of land above described and then claimed by such lessee, transferee or assignee hereunder, and the same shall be due and payable in advance to the lessor on the successive anniversary dates of this lease, but the annual rental on any assignment shall in no event be less than Six Dollars ($6.00).

In event the lessee shall elect to surrender any or all of said acreage, he shall deliver to the Commissioner a duly executed release thereof and in event said lease has been recorded, then he shall upon request furnish and deliver to said Commissioner a certified copy of a duly recorded release.

5. The lessee may at any time by paying to the State of New Mexico, acting by its Commissioner of Public Lands, or other authorized officer, all amounts then due as provided herein and the further sum of Ten Dollars ($10.00), surrender and cancel this lease insofar as the same covers all or any portion of the lands herein leased and be relieved from further obligations or liability hereunder, in the manner as hereinbefore provided. Provided, this surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law or equity by the lessee, lessor or any assignee, to enforce this lease, or any of its terms express or implied.

6. All payments due hereunder shall be made on or before the day such payment is due, in cash or by certified exchange at the Office of the Commissioner of Public Lands in Santa Fe, New Mexico.

7. The lessee with the consent of the lessor, shall have the right to assign this lease in whole or in part. Provided, however, that no assignment of any undivided interest in the lease or any part thereof nor any assignment of less than a legal subdivision shall be recognized or approved by the lessor. Upon approval in writing by the lessor of an assignment, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment and the lessor shall likewise be relieved from all obligations to the assignor as to such tracts and the assignee shall succeed to all of the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

8. Lessee agrees, with reasonable diligence to offset all paying oil or gas wells drilled, within 300 feet of any of the land covered by this lease and retained hereunder.

9. The lessee agrees to notify the lessor of the location of each well before commencing drilling thereon, to keep a complete and accurate log of each well drilled and to furnish a copy thereof, verified by some person having actual knowledge of the facts, to the lessor upon the completion of any well, and to furnish the log of any unfinished well at any time when requested to do so by the lessor. If any lands embraced in this lease shall be included in any deed or contract of purchase outstanding and subsisting issued pursuant to any sale made of the surface of such lands prior to the date of this lease, it is agreed and understood that no drilling operations shall be commenced on any such lands so sold unless and until the lessee or his assignee shall have filed a good and sufficient bond with the lessor as required by law, to secure the payment for such damage to the livestock, range, water, crops or tangible improvements on such lands as may be suffered by the purchaser holding such deed or contract of purchase, or his successors by reason of the developments, use and occupation of such lands by such lessee. Provided, however, that no such bond shall be required if such purchaser shall waive the right to require such bond to be given in the manner provided by law.

10. In drilling wells all water-bearing strata shall be noted in the log, and the lessor reserves the right to require that all or any part of the casing shall be left in any non-productive well when lessor deems it to the interest of the State of New Mexico to maintain said well or wells for water. For such casing so let in wells the lessor shall pay the lessee the reasonable value thereof.

11. Lessee shall be liable and agrees to pay for all damages to the range, livestock, growing crops or improvements caused by lessee's operations on said lands. When requested by the lessor, the lessee shall bury pipelines below plow depth.

12. The lessee shall not remove any machinery or fixtures placed on said premises, nor draw the casing from any well unless and until all payments and obligations due the lessor under the terms of this agreement shall have been paid or satisfied. The lesse's right to remove the casing is subject to the provision of paragraph 10 above.

13. Upon failure or default of the lessee or any assignee to comply with any of the provisions or convenants hereof, the lessor is hereby authorized to cancel this lease and such cancellation shall extend to and include all rights hereunder as to the whole of the tract so claimed, or possessed by the lessee or assignee so defaulting, but shall not extend to, nor affect the rights of any other lessee or assignee claiming any portion of

the lands upon which no default has been made; provided however, that before any such cancellation shall be made, the lessor shall mail to the lessee or assignee so defaulting, by registered mail addressed to the post-office address of such lessee or assignee as shown by the records of the State Land Office, a notice of intention of cancellation specifying the default for which cancellation is to be made, and if within 30 days from the date of mailing said notice the said lessee or assignee shall remedy the default specified in said notice, cancellation shall not be made.

14. All the terms of this agreement shall extend to and bind the heirs, executors, administrators, successors and assigns of the parties hereto.

15. If the lessee shall have failed to make discovery of oil and-/or gas in paying quantities during the primary term hereof, the lessee may continue this lease in full force and effect for an additional term of five years and as long thereafter as oil and gas in paying quantities, or either of them is produced from the leased premises, by paying each year in advance, as herein provided, double the rental provided herein for the primary term, or the highest rental prevailing at the commencement of the secondary term in any rental district, or districts in which the lands or any part thereof, may be situated, if it be greater than double the rental provided for the primary term. (This paragrah (15) shall not be inserted in any lease issued pursuant to the provisions of Section 3 (132-403) of this Act.)

IN WITNESS WHEREOF; the party of the first part has hereunto signed and caused its name to be signed by its Commissioner of Public Lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement the day and year first above written.

STATE OF NEW MEXICO

By E. K. Rodgers

COMMISSIONER OF PUBLIC LANDS, Lessor.

ATTEST: [signature]

(M. Sorel) Secretary

TEXAS PACIFIC COAL AND OIL COMPANY

By [signature]

Lessee. Vice-President (SEAL)

Distributed this the 1st day of October, 19 44

(PERSONAL ACKNOWLEDGMENT)

[redacted] ss.

[redacted]

.....day of....., 19....., personally appeared before me .....

to be the person..... who executed the foregoing instrument as Lessee, and acknowledged that ..... executed the same as.....free act and deed.

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGED BY ATTORNEY IN FACT)

STATE OF.....
COUNTY OF..... ss.

On this the.....day of....., 19....., personally appeared before me .....

to me known to be the person.....who executed the foregoing instrument in behalf of.....

.....

and acknowledged that.....he.....executed the same as the free act and deed of said.....

.....

.....

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGMENT BY CORPORATION)

STATE OF TEXAS
COUNTY OF TARRANT ss.

On this the 18th day of September, 1944, personally appeared

C. E. Yager

to me personally known, who being by me duly sworn did say that he is the Vice-President of TEXAS PACIFIC COAL AND OIL COMPANY and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said

C. E. Yager

acknowledges said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF; I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

E. J. Robbins

(E. J. Robbins) Notary Public.
Tarrant County, Texas

My Commission Expires:
June 1, 1945

STATE LAND OFFICE

DEC 24 11 19 AM '42

NM-212

Form 44- DUPLICATE

LEASE NO. B-9950

SANTA FE, N. M.

APPLICATION NO. B-9950

OIL AND GAS LEASE

THIS AGREEMENT, dated this the 10th day of December, A. D. 1942, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor," and Texas Pacific Coal and Oil Company, Box 2110, Fort Worth, Texas,

party of the second part, hereinafter called the "Lessee," whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of Public Lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

WHEREAS, all of the requirements of law relative to said application and tender have been duly complied with and said application has been approved and allowed by the Commissioner of Public Lands:

THEREFORE, for and in consideration of the premises as well as the sum of One Hundred Sixteen and 99/100ths - - - - - - - - - ($ 116.99) Dollars, the same being the amount of the tender above mentioned, paid in cash, and evidenced by official Receipt No. 22371, and of the further sum of $ 5.00 filing fee, and of the covenants and agreements hereinafter contained on the part of the lessee to be paid, kept and performed, the said lessor has granted and demised, leased and let, and by these presents does grant, demise, lease and let unto the said lessee, exclusively, for the sole and only purpose of exploration, development and production of oil and-/or gas thereon and therefrom with the right to own all oil and gas so produced and saved therefrom and not reserved as royalty by the lessor under the terms of this lease, together with rights of way, easements and servitudes for pipe lines, telephone and telegraph lines, tanks, power houses, stations, gasoline plants, and fixtures for producing, treating and caring for such products, and housing and boarding employees, and any and all rights and privileges necessary, incident to or convenient for the economical operation of said land, for oil and gas, with right for such purposes to the free use of oil, gas, casing-head gas, or water from said lands, but not from lessor's water wells, and with the right of removing either during or after the term hereof, all and any improvements placed or erected on the premises by the lessee, including the right to pull all casing, subject, however, to the conditions hereinafter set out, the following described land situate in the County of Lea, State of New Mexico, and more particularly described as follows:

Line	Institution	Sec.	Twp.	Range	SUBDIVISION Column 1	SUBDIVISION Column 2	SUBDIVISION Column 3	SUBDIVISION Column 4	Acres
1	C.S.	2	12S	33E			SW¼NE¼	SE¼NE¼	80.00
2	"	"	"	"	NE¼SE¼	NW¼SE¼			80.00
3	M.Inst.	4	"	"		NW¼SE¼	SW¼SE¼		80.00
4	C.S.	7	"	"			SW¼NE¼	SE¼NE¼	80.00
5	"	10	"	"		NW¼SW¼	SW¼SW¼		80.00
6	"	"	"	"	NE¼SE¼		SW¼SE¼		80.00
7	"	11	"	"	NE¼NE¼	NW¼NE¼			80.00
8	"	16	"	"			SW¼NE¼	SE¼NE¼	80.00
9									640.00
10									
11									
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said lands having been awarded to lessee and designated as tract No. 12 at a public sale held by the Commissioner of Public Lands on Dec. 10, 19 42. (To be filled in only where lands are offered at public sale.)

TO HAVE AND TO HOLD said land, and all the rights and privileges granted hereunder, to and unto the lessee for a primary term of 5 years from the date hereof, and as long thereafter as oil and gas in paying quantities, or either of them, is produced from said land by the lessee, subject to all the terms and conditions as hereinafter set forth.

In consideration of the premises the parties covenant and agree as follows:

1. Subject to the free use without royalty, as hereinbefore provided, the lessee shall pay the lessor as royalty one-eighth part of the oil produced and saved from the leased premises, or the cash value thereof, at the option of the lessor, such value to be the price prevailing the day oil is run into a pipe line, if the oil be run into a pipe line, or into storage tanks, if the oil be stored.

2. The lessee agrees to pay the lessor the one-eighth of the net proceeds derived from the sale of gas from each gas well. If casing-head gas produced from said land is sold by the lessee, the lessee shall pay the lessor as royalty one-eighth of the net proceeds of said sale; if casing-head gas produced from said lands is utilized by the lessee otherwise than for carrying on the lessee's operations for producing oil or gas from said lands, then the lessee shall pay the lessor the market value in the field of the equal one-eighth part of the casing-head gas so utilized at the time of such utilization.

3. Lessee agrees to make full settlement on the 20th day of each month for all royalties due the lessor for the preceding month, under this lease, and to permit the lessor or its agents, at all reasonable hours, to examine lessee's books relating to the production and disposition of oil and gas produced. The lessee further agrees to submit to the lessor, for each and every royalty payment, a correct statement showing the amount of oil and gas produced and saved since his last report and the market value thereof. Lessee further agrees to submit to lessor annually upon forms furnished by lessor, verified reports showing lessee's operations for the preceding year.

4. It is expressly agreed that the consideration hereinbefore specified is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to prevent the termination of this lease from year to year, by the payment or tender of the further rental hereinafter provided for.

An annual rental, at the rate of 10 cents per acre shall also become due and payable to the lessor by the lessee, or by any transferee or assignee of the same, or any part hereof, where such transferee or assignee has been recognized, and such transfer or assignment approved by the lessor as hereinafter provided, upon each acre of the land above described and then claimed by such lessee, transferee or assignee hereunder, and the same shall be due and payable in advance to the lessor on the successive anniversary dates of this lease, but the annual rental on any assignment shall in no event be less than Six Dollars ($6.00).

In event the lessee shall elect to surrender any or all of said acreage, he shall deliver to the Commissioner a duly executed release thereof and in event said lease has been recorded, then he shall upon request furnish and deliver to said Commissioner a certified copy of a duly recorded release.

5. The lessee may at any time by paying to the State of New Mexico, acting by its Commissioner of Public Lands, or other authorized officer, all amounts then due as provided herein and the further sum of Ten Dollars ($10.00), surrender and cancel this lease insofar as the same covers all or any portion of the lands herein leased and be relieved from further obligations or liability hereunder, in the manner as hereinbefore provided. Provided, this surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law or equity by the lessee, lessor, or any assignee, to enforce this lease, or any of its terms express or implied.

6. All payments due hereunder shall be made on or before the day such payment is due, in cash or by certified exchange at the Office of the Commissioner of Public Lands in Santa Fe, New Mexico.

7. The lessee with the consent of the lessor, shall have the right to assign this lease in whole or in part. Provided, however, that no assignment of any undivided interest in the lease or any part thereof nor any assignment of less than a legal subdivision shall be recognized or approved by the lessor. Upon appoval in writing by the lessor of an assignment, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment and the lessor shall likewise be relieved from all obligations to the assignor as to such tracts and the assignee shall succeed to all the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

8. Lessee agrees, with reasonable diligence to offset all paying oil or gas wells drilled, within 300 feet of any of the land covered by this lease and retained hereunder.

9. The lessee agrees to notify the lessor of the location of each well before commencing drilling thereon, to keep a complete and accurate log of each well drilled and to furnish a copy thereof, verified by some person having actual knowledge of the facts, to the lessor upon the completion of any well, and to furnish the log of any unfinished well at any time when requested to do so by the lessor. If any lands embraced in this lease shall be included in any deed or contract of purchase outstanding and subsisting issued pursuant to any sale made of the surface of such lands prior to the date of this lease, it is agreed and understood that no drilling operations shall be commenced on any such lands so sold unless and until the lessee or his assignee shall have filed a good and sufficient bond with the lessor as required by law, to secure the payment for such damage to the livestock, range, water, crops or tangible improvements on such lands as may be suffered by the purchaser holding such deed or contract of purchase, or his successors by reason of the developments, use and occupation of such lands by such lessee. Provided, however, that no such bond shall be required if such purchaser shall waive the right to require such bond to be given in the manner provided by law.

10. In drilling wells all water-bearing strata shall be noted in the log, and the lessor reserves the right to require that all or any part of the casing shall be left in any non-productive well when lessor deems it to the interest of the State of New Mexico to maintain said well or wells for water. For such casing so left in wells the lessor shall pay to the lessee the reasonable value thereof.

11. Lessee shall be liable and agrees to pay for all damages to the range, livestock, growing crops or improvements caused by lessee's operations on said lands. When requested by lessor, the lessee shall bury pipelines below plow depth.

12. The lessee shall not remove any machinery or fixtures placed on said premises, nor draw the casing from any well unless and until all payments and obligations due the lessor under the terms of this agreement shall have been paid or satisfied. The lessee's right to remove the casing is subject to the provision of paragraph 10 above.

13. Upon failure or default of the lessee or any assignee to comply with any of the provisions or convenants hereof, the lessor is hereby authorized to cancel this lease and such cancelation shall extend to and include all rights hereunder as to the whole of the tract so claimed, or possessed by the lessee or assignee so defaulting, but shall not extend to, nor affect the rights of any other lessee or assignee claiming any portion of

the lands upon which no default has been made; provided, however, that before any such cancellation shall be made, the lessor shall mail to the lessee or assignee so defaulting, by registered mail; addressed to the post-office address of such lessee or assignee as shown by the records of the State Land Office, a notice of intention of cancellation specifying the default for which cancellation is to be made, and if within 30 days from the date of mailing said notice the said lessee or assignee shall remedy the default specified in said notice, cancellation shall not be made.

14. All the terms of this agreement shall extend to and bind the heirs, executors, administrators, successors and assigns of the parties hereto.

15. If the lessee shall have failed to make discovery of oil and/or gas in paying quantities during the primary term hereof, the lessee may continue this lease in full force and effect for an additional term of five years and as long thereafter as oil and gas in paying quantities, or either of them is produced from the leased premises, by paying each year in advance, as herein provided, double the rental provided herein for the primary term, or the highest rental prevailing at the commencement of the secondary term in any rental district, or districts in which the lands or any part thereof, may be situated, if it be greater than double the rental provided for the primary term. (This paragraph (15) shall not be inserted in any lease issued pursuant to the provisions of Section 3 (132-403) of this Act.)

IN WITNESS WHEREOF, the party of the first part has hereunto signed and caused its name to be signed by its Commissioner of Public Lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement the day and year first above written.

STATE OF NEW MEXICO

By H. L. Kolliger
COMMISSIONER OF PUBLIC LANDS Lessor.

ATTEST:

Texas Pacific Coal and Oil Company

By: C. E. Yager Vice President

(R. Seibel) Secretary

Lessee. (C. E. Yager) (SEAL)

Distributed this the 24th day of Dec, 19 42

PERSONAL ACKNOWLEDGE



STATE OF .....)
ss.
COUNTY OF .....)

On this the.....day of....., 19....., personaly appeared before me

.....

to me known to be the person..... who executed the foregoing instrument as Lessee, and acknowledged the

.....he..... executed the same as.....free act and deed.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGED BY ATTORNEY IN FACT)

STATE OF .....)
ss.
COUNTY OF .....)

On this the.....day of....., 19....., personally appeared

before me .....

to me known to be the person.....who executed the forgoing instrument in behalf of.....

.....

and acknowledged that .....he..... executed the same as the free act and deed of said.....

.....

.....

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

.....

My Commission Expires: Notary Public.

(ACKNOWLEDGMENT BY CORPORATION)

STATE OF TEXAS .....)
ss.
COUNTY OF TARRANT .....)

On this the 19th day of December, 19 42, personally appeared C. E. Yager

.....

to me personally known, who being by me duly sworn did say that he is the Vice President

of Texas Pacific Coal and Oil Company

.....

and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said

Texas Pacific Coal and Oil Company

.....

acknowledges said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

E. J. Robbins

.....

My Commission Expires: Notary Public.

June 1, 1943

NM-211

DUPLICATE

LEASE NO. B-949 APPLICATION NO. B-9949

OIL AND GAS LEASE

THIS AGREEMENT, dated this the 10th day of December, A. D. 1942, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor," and Texas Pacific Coal and Oil Company, Box 2110, Fort Worth, Texas,

party of the second part, hereinafter called the "Lessee," whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of Public Lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

WHEREAS, all of the requirements of law relative to said application and tender have been duly complied with and said application has been approved and allowed by the Commissioner of Public Lands:

THEREFORE, for and in consideration of the premises as well as the sum of One Hundred Twenty One and 99/100ths- - - - - - - - ($ 121.99) Dollars, the same being the amount of the tender above mentioned, paid in cash, and evidenced by official Receipt No. 22370, and of the further sum of $ 5.00 filing fee, and of the covenants and agreements hereinafter contained on the part of the lessee to be paid, kept and performed, the said lessor has granted and demised, leased and let, and by these presents does grant, demise, lease and let unto the said lessee, exclusively, for the sole and only purpose of exploration, development and production of oil and/or gas thereon and therefrom with the right to own all oil and gas so produced and saved therefrom and not reserved as royalty by the lessor under the terms of this lease, together with rights of way, easements and servitudes for pipe lines, telephone and telegraph lines, tanks, power houses, stations, gasoline plants, and fixtures for producing, treating and caring for such products, and housing and boarding employees, and any and all rights and privileges necessary, incident to or convenient for the economical operation of said land, for oil and gas, with right for such purposes to the free use of oil, gas, casing-head gas, or water from said lands, but not from lessor's water wells, and with the right of removing either during or after the term hereof, all and any improvements placed or erected on the premises by the lessee, including the right to pull all casing, subject, however, to the conditions hereinafter set out, the following described land situate in the County of Lea, State of New Mexico, and more particularly described as follows:

Line	Institution	Sec.	Twp.	Range	SUBDIVISION Column 1	Column 2	Column 3	Column 4	Acres
1	C.S.	2	12S	33E		Lot 2 39.89			39.89
2	"	"	"	"	Lot 3 39.89			SE¼NW¼	79.89
3	"	"	"	"		NW¼SW¼	SW¼SW¼		80.00
4	M.Inst.	4	"	"	Lot 1 40.37	Lot 2 40.30	SW¼NE¼	SE¼NE¼	160.67
5	C.S.	14	"	"		NW¼NW¼	SW¼NW¼		80.00
6	"	16	"	"	NE¼NW¼				40.00
7	"	"	"	"	NE¼SW¼		SW¼SE¼		80.00
8									560.45
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

said lands having been awarded to lessee and designated as tract No. 11 at a public sale held by the Commissioner of Public Lands on Dec. 10, 19 42. (To be filled in only where lands are offered at public sale.)

TO HAVE AND TO HOLD said land, and all the rights and privileges granted hereunder, to and unto the lessee for a primary term of 5 years from the date hereof, and as long thereafter as oil and gas in paying quantities, or either of them, is produced from said land by the lessee, subject to all the terms and conditions as hereinafter set forth.

In consideration of the premises the parties covenant and agree as follows:

1. Subject to the free use without royalty, as hereinbefore provided, the lessee shall pay the lessor as royalty one-eighth part of the oil produced and saved from the leased premises, or the cash value thereof, at the option of the lessor, such value to be the price prevailing the day oil is run into a pipe line, if the oil be run into a pipe line, or into storage tanks, if the oil be stored.

2. The lessee agrees to pay the lessor the one-eighth of the net proceeds derived from the sale of gas from each gas well. If casing-head gas produced from said land is sold by the lessee, the lessee shall pay the lessor as royalty one-eighth of the net proceeds of said sale; if casing-head gas produced from said lands is utilized by the lessee other wise than for carrying on the lessee's operations for producing oil or gas from said lands, then the lessee shall pay the lessor the market value in the field of the equal one-eighth part of the casing-head gas so utilized at the time of such utilization.

3. Lessee agrees to make full settlement on the 20th day of each month for all royalties due the lessor for the preceding month, under this lease, and to permit the lessor or its agents, at all reasonable hours, to examine lessee's books relating to the production and disposition of oil and gas produced. The lessee further agrees to submit to the lessor, for each and every royalty payment, a correct statement showing the amount of oil and gas produced and saved since his last report and the market value thereof. Lessee further agrees to submit to lessor annually upon forms furnished by lessor, verified reports showing lessee's operations for the preceding year.

4. It is expressly agreed that the consideration hereinbefore specified is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to prevent the termination of this lease from year to year, by the payment or tender of the further rental hereinafter provided for.

An annual rental, at the rate of 10 cents per acre shall also become due and payable to the lessor by the lessee, or by any transferee or assignee of the same, or any part hereof, where such transferee or assignee has been recognized, and such transfer or assignment approved by the lessor as hereinafter provided, upon each acre of the land above described and then claimed by such lessee, transferee or assignee hereunder, and the same shall be due and payable in advance to the lessor on the successive anniversary dates of this lease, but the annual rental on any assignment shall in no event be less than Six Dollars ($6.00).

In event the lessee shall elect to surrender any or all of said acreage, he shall deliver to the Commissioner a duly executed release thereof and in event said lease has been recorded, then he shall upon request furnish and deliver to said Commissioner a certified copy of a duly recorded release.

5. The lessee may at any time by paying to the State of New Mexico, acting by its Commissioner of Public Lands, or other authorized officer, all amounts then due as provided herein and the further sum of Ten Dollars ($10.00), surrender and cancel this lease insofar as the same covers all or any portion of the lands herein leased and be relieved from further obligations or liability hereunder, in the manner as hereinbefore provided. Provided, this surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law or equity by the lessee, lessor, or any assignee, to enforce this lease, or any of its terms express or implied.

6. All payments due hereunder shall be made on or before the day such payment is due, in cash or by certified exchange at the Office of the Commissioner of Public Lands in Santa Fe, New Mexico.

7. The lessee with the consent of the lessor, shall have the right to assign this lease in whole or in part. Provided, however, that no assignment of any undivided interest in the lease or any part thereof nor any assignment of less than a legal subdivision shall be recognized or approved by the lessor. Upon appoval in writing by the lessor of an assignment, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment and the lessor shall likewise be relieved from all obligations to the assignor as to such tracts and the assignee shall succeed to all the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

8. Lessee agrees, with reasonable diligence to offset all paying oil or gas wells drilled, within 300 feet of any of the land covered by this lease and retained hereunder.

9. The lessee agrees to notify the lessor of the location of each well before commencing drilling thereon, to keep a complete and accurate log of each well drilled and to furnish a copy thereof, verified by some person having actual knowledge of the facts, to the lessor upon the completion of any well, and to furnish the log of any unfinished well at any time when requested to do so by the lessor. If any lands embraced in this lease shall be included in any deed or contract of purchase outstanding and subsisting issued pursuant to any sale made of the surface of such lands prior to the date of this lease, it is agreed and understood that no drilling operations shall be commenced on any such lands so sold unless and until the lessee or his assignee shall have filed a good and sufficient bond with the lessor as required by law, to secure the payment for such damage to the livestock, range, water, crops or tangible improvements on such lands as may be suffered by the purchaser holding such deed or contract of purchase, or his successors by reason of the developments, use and occupation of such lands by such lessee. Provided, however, that no such bond shall be required if such purchaser shall waive the right to require such bond to be given in the manner provided by law.

10. In drilling wells all water-bearing strata shall be noted in the log, and the lessor reserves the right to require that all or any part of the casing shall be left in any non-productive well when lessor deems it to the interest of the State of New Mexico to maintain said well or wells for water. For such casing so left in wells the lessor shall pay to the lessee the reasonable value thereof.

11. Lessee shall be liable and agrees to pay for all damages to the range, livestock, growing crops or improvements caused by lessee's operations on said lands. When requested by lessor, the lessee shall bury pipelines below plow depth.

12. The lessee shall not remove any machinery or fixtures placed on said premises, nor draw the casing from any well unless and until all payments and obligations due the lessor under the terms of this agreement shall have been paid or satisfied. The lessee's right to remove the casing is subject to the provision of paragraph 10 above.

13. Upon failure or default of the lessee or any assignee to comply with any of the provisions or covenants hereof, the lessor is hereby authorized to cancel this lease and such cancelation shall extend to and include all rights hereunder as to the whole of the tract so claimed, or possessed by the lessee or assignee so defaulting, but shall not extend to, nor affect the rights of any other lessee or assignee claiming any portion of

the lands upon which no default has been made; provided, however, that before any such cancellation shall be made, the lessor shall mail to the lessee or assignee so defaulting, by registered mail, addressed to the post-office address of such lessee or assignee as shown by the records of the State Land Office, a notice of intention of cancellation specifying the default for which cancellation is to be made, and if within 30 days from the date of mailing said notice the said lessee or assignee shall remedy the default specified in said notice, cancellation shall not be made.

14. All the terms of this agreement shall extend to and bind the heirs, executors, administrators, successors and assigns of the parties hereto.

15. If the lessee shall have failed to make discovery of oil and/or gas in paying quantities during the primary term hereof, the lessee may continue this lease in full force and effect for an additional term of five years and as long thereafter as oil and gas in paying quantities, or either of them is produced from the leased premises, by paying each year in advance, as herein provided, double the rental provided herein for the primary term, or the highest rental prevailing at the commencement of the secondary term in any rental district, or districts in which the lands or any part thereof, may be situated, if it be greater than double the rental provided for the primary term. (This paragraph (15) shall not be inserted in any lease issued pursuant to the provisions of Section 3 (132-403) of this Act.)

IN WITNESS WHEREOF, the party of the first part has hereunto signed and caused its name to be signed by its Commissioner of Public Lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement the day and year first above written.

STATE OF NEW MEXICO

By E. L. Medders
COMMISSIONER OF PUBLIC LANDS, Lessor.

ATTEST:

(R. Seibel) Secretary

Texas Pacific Coal and Oil Company

By: C. E. Yager Vice President
Lessee. (C. E. Yager) (SEAL)

Distributed this the 29th day of Dec, 1942

PERSONAL ACKNOWL[redacted]

STATE OF .....
COUNTY OF ..... } ss.

On this the.....day of [redacted] before me

.....

to me known to be the person..... who executed the foregoing instrument as Lessee, and acknowledged the .....he..... executed the same as.....free act and deed.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

My Commission Expires: ..... Notary Public.

(ACKNOWLEDGED BY ATTORNEY IN FACT)

STATE OF .....
COUNTY OF ..... } ss.

On this the.....day of....., 19....., personally appeared before me .....

to me known to be the person.....who executed the forgoing instrument in behalf of.....

.....

and acknowledged that .....he..... executed the same as the free act and deed of said.....

.....

.....

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

My Commission Expires: ..... Notary Public.

(ACKNOWLEDGMENT BY CORPORATION)

STATE OF TEXAS
COUNTY OF TARRANT } ss.

On this the 19th day of December, 1942, personally appeared C. E. Yager

to me personally known, who being by me duly sworn did say that he is the Vice President of Texas Pacific Coal and Oil Company

and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said Texas Pacific Coal and Oil Company

acknowledges said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

E. J. Robbins
Notary Public.

My Commission Expires:
June 1, 1943

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

The following proceedings before the Oil Conservation Commission, State of New Mexico, came on pursuant to legal notice of publication, and at the time and place as set out below.

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, of the following public hearing to be held December 20, 1949, beginning at 10:00 o'clock A.M., on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

STATE OF NEW MEXICO TO:

All named parties in the following cases, and notice to the public;

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW¼SE¼, Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico. This is a readvertisement.

Case 207

In the matter of application of Stanley L. Jones, Inc., a New Mexico Corporation, for an order approving an unorthodox location for Stanley L. Jones, Inc., State No. 13, 338 feet south of the north line and 73 feet west of the east line NE¼NE¼NE¼ of Section 23, Township 18 South, Range 27 East, N.M.P.M., in the Artesia pool, Eddy County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
R. R. SPURRIER, SECRETARY

SEAL

I N D E X

WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
John A. Veeder	7	20	44	46
R. S. Christie	15	48	60	61
G. R. Carter	64	81	89	
R. G. Schaehle	91			
REBUTTAL				
C. V. Millikan	96	100		

EXHIBITS

NUMBER		IN EVIDENCE
Applicant's Nos.	1 & 2	Page 9
"	3 & 4	43
Tex.-Pac. Exhibit	"A"	22
"	"B"	65
"	"C", "D", "E", "F", "G"	68
"	"H"	69
"	"I", "J", "K", "L"	70
"	"M"	72
"	"N"	73
"	"O"	74
"	"P"	81
"	"Q"	95

BEFORE: Hon.Guy Shepard, Chairman

Hon. R. R. Spurrier, Secretary and Member

REGISTER:

Don G. McCormick, Carlsbad, N.M., for Oil Conservation Commission.

George A. Graham, Santa Fe, N.M., for Oil Conservation Commission.

Booth Kellough, Tulsa, Okla., for Amerada Petroleum Corporation.

J. O. Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

Oliver Seth, Santa Fe, N.M., for Amerada Petroleum Corp.

R. S. Christie, Ft. Worth, Texas, for Amerada Petroelum Corporation.

John A. Veeder, Midland, Texas, for Amerada Petrdeum Corporation.

C. V. Millikan, Tulsa, Oklahoma, for Amerada Petroleum Corporation.

Eugene T. Adair, Ft. Worth, Texas, for Texas-Pacific Coal & Oil Company.

Jack M. Campbell, Roswell, N.M., for Texas-Pacific Coal & Oil Company.

G. H. Carter, Midland, Texas, for Texas-Pacific Coal & Oil Company.

R. G. Schaehle, Midland, Texas, for Texas-Pacific Coal & Oil Company.

Foster Morrell, Roswell, N.M., for U.S.C.S.

J. H. Crocker, Tulsa, Oklahoma, for Mid-Continent Petroleum Corporation.

Glenn Staley, Hobbs, N.M., for Lea County Operators.

Roy O. Yarbrough, Hobbs, N.M., for Oil Conservation Commission.

Robert C. Anderson, Roswell, for Malco Ref. Inc.

Howard Jennings, Roswell, N.M., for Malco Ref. Inc.

Elmer A. Utz, Santa Fe, N.M., for Oil Conservation Commission.

E. E. Kinney, Artesia, N.M., for N.M. Bureau of Mines.

Hon. Thos. J. Mabry, Santa Fe, N.M., for Oil Conservation Commission.

COMM. SHEPARD: The meeting will come to order.

There has been a request made that Case 207 be continued until 10 o'clock on the morning of the 27th, and the record will show, without objection, that it has been continued to that time.

At this time we will take up Case 191. Will you read it, Mr. Graham, please?

(Reads the notice of publication in Case No. 191).

MR. KELLOUGH: My name is Booth Kellough. I am attorney for Amerada Petroleum Corporation. I believe it would be helpful to make a very brief statement of our position in this case before we come to our evidence.

This is Amerada's application for a proration of units and uniform spacing of wells in the pool which has been denominated as the Bagley Pool in Lea County. Our request is for 80-acre proration units and a uniform spacing pattern.

The probable productive limits of this pool have been delineated by our geologist and the request is for the location of the units that they comprise, the W½ and the E½ of each quarter section; that is, they run north and south, with certain -- I believe about eight exceptions, running each and west, which we are recommending, due to the ownership conditions.

We are also asking for a uniform pattern for the spacing of wells whereby the wells will be located in the northwest 40-acre tract, or the NW¼ and the SE¼ of each quarter section. In order to clarify that statement, each quarter section of 140 acres will be divided by a line running north and south, making the west units and the east units, the wells to be located in the NW¼ and the SE¼. Now, that is the pattern which we are asking for.

The discovery well was the BTA Well. It was drilled to a depth of approximately -- well, put it this way: I believe our evidence would show it producing at a depth of approximately 10,000 feet. and our evidence will further show that the well cost in the neighborhood of $312,000.00 to drill t he discovery well. Our evidence will further show that the estimated cost of future wells in the area will be approximately $225,000.00.

Not only because of the deep pool and the expensive wells, but our application for 80-acre proration units is based upon the belief -- and we are satisfied that our evidence will support it -- that this is a reservoir of very good quality and it has an effective water drive, so that one well will adequately and economically drain at least an area of 80 acres. Our evidence will further show that this pool is analogous to other pools in the area which have been successfully produced on 80 acres.

There is one particular point that I wish to call the Commission's attention to, with reference to our spacing pattern. It will be our recommendation that if an order is granted as we request, that it provide that the Commission for good cause shown, may grant an exception to the spacing pattern for a well to be located off of the pattern for structure or other reasons, suitable to the Commission, in which event, the allowable for the well will be reduced, the amount of the reduction to be determined by the Commission on the evidence produced at a hearing.

In other words, it is our thought that in order to assure all of the owners a recovery of their fair share of the oil from their reservoir, that it should be developed on the 80-acre spacing -- well spacing pattern, which we recommend, with the provision that the exceptions be granted, but in the event they

are granted, the Commission should then look at the evidence and determine to what extent the allowable should be cut in order that the party making the off-pattern location will not obtain an undue advantage over his neighbor.

There are other operators in this area. In addition to Amerada, there is the Gulf and the Phillips and the Mid-Continent and the Texas and Pacific Coal & Oil Company. We are informed that the Gulf and the Mid-Continent and the Phillips are favorable to our application. It is our belief that when we lay the evidence before this Commission, that you will agree that this pool should be developed on 80-acre units with a uniform spacing pattern.

MR. CAMPBELL: May it please the Commission --

MR. SHEPARD: Give your name please.

MR. CAMPBELL: Jack M. Campbell, representing Texas and Pacific Coal and Oil Company. Before the first witness is called, and without the thought of trying to suggest to the applicant how or when to present his case, we feel that the opening statement should include, for the benefit of the Commission and other operators and royalty owners interested, a statement -- or that the first witness should definitely make a statement as to what type allowable is to be requested for the 80-acre proration unit, that is, whether it will be the present 40-acre top unit allowable, as in previous order, or whether there is to be some change.

I also feel -- perhaps I missed it in the opening statement -- that the Commission should know and the interested parties should know if the proposed locations within the quarter sections suggested, are to be in the center, or if there is to be some leeway requested when the ultimate request by

the applicant is before this Commission.

MR. KELLOUGH: On the last point first, our application -- the one we filed provides that the well location should be in the center of the particular quarter section involved, with a tolerance of 150 feet in any direction for surface obstructions, in order to avoid surface obstructions.

Now, as to Mr. Campbell's request as to the manner in which we present our case, I only have this to say: that we will present to the Commission all of our evidence, and I am sure they will have ample opportunity to examine any of our witnesses on proper subjects, and I believe that any of his doubts as to our position will probably be settled by our evidence; so with the permission of the Commission, we will proceed with the evidence in this case.

COMM. SHEPARD: Call your first witness, please.

MR. KELLOUGH: I don't believe they have been sworn.

COMM. SHEPARD: Mr. Graham, will you swear them, please.

JOHN A. VEEDER

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Kellough:

Q Will you please state your name to the Commission?

A John A. Veeder.

Q Where do you live, Mr. Veeder?

A Midland.

Q And by whom are you employed?

A Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Assistant District Geologist.

Q How long have you been a geologist for Amerada?

A Thirteen years.

Q Have you previously testified before this Commission in the capacity of a geologist on geological matters?

A I have.

Q Mr. Veeder, are you familiar with the Amerada B.T.A. No. 1 Well located in the center of the NW¼SE¼, Section 2, Township 12 South, Range 33 East, Lea County, New Mexico?

A I am.

Q I hand you what has been marked as Applicant's Exhibit No. 1, and ask you to state, please, what that is?

A This is the outlined area of Bagley Area, in which we would recommend our required or designated spacing.

Q This map then shows by the red line the area asked to be covered by the spacing order in this application, is that correct?

A That's right.

Q The map also shows the location of the wells drilled on the Devonian formation, is that right?

A That is right.

Q And does it also show the wells drilled on the Pennsylvanian formation?

A That is so.

Q Now, that is indicated on the exhibit itself, is it not?

A That's right. The Pennsylvanian wells are two of them and they are marked, designated on the map by the smaller circle.

Q And the map further shows the proposed location of any wells which might be drilled on the pattern asked for in our application?

A That's right.

Q Now, those are indicated by a cross, is that correct?

A Right.

Q The map further shows the location of the units by dotted line, which do not conform to the W½ or the E½ of the quarter sections, is that right?

A That is right.

Q Do you have the Schlumberger of the B.T.A.? Thank you. Will you mark this please? (Done).

I hand you what has what has been marked, Applicant's Exhibit No. 2, and ask that you please state to the Commission what this instrument is?

COMM. SHEPARD: Exhibit No. 1 and No. 2, will be received and admitted in evidence.

(Applicant's Exhibits Nos. 1 and 2, received in evidence).

Q (By Mr. Kellough) Will you state to the Commission what that is and what it shows?

A That is Schlumberger of the Amerada No. 1, State B.T.A. Schlumberger is marked at the top from the Mississippian on down to the basic and these are Schlumberger tops.

Q Do you have Schlumbergers on any other of Amerada's wells which have been supplied in this Bagley?

A I have Schlumbergers on the Amerada No. 1, State B.T.A. and B.T.C.

Q Now I hand you what has been marked Applicant's Exhibit No. 3, and ask you to please state to the Commission what that instrument is and what it shows.

A This well is also in Schlumberger electrical log under said well, showing the top of the formation, and also the section below in the Devonian from which we are producing.

Q Do you have any other Schlumberger on any other wells drilled

by Amerada?

A I have one other Schlumberger, the Amerada State B.T.D.

Q Now, Mr. Veeder, I hand you what has been marked Applicant's Exhibit No. 4, and ask you to state to the Commission what that instrument is and what it shows.

A This is also a Schlumberger electrical log on the Amerada No. 1, State B.T.D., which is also a Devonian producer. On the log we have marked the top of the Devonian.

Q When was the discovery well, B.T.A. No. 1 completed?

A The B.T.A. was completed June 16, 1949.

Q Did that well discover, in your opinion, a new reservoir, or a new common source of supply not heretofore producing?

A It did.

Q What is the producing formation in that well?

A The producing formation in Amerada No. 1, State B.T.A., is the Devonian.

Q Will you please give to the Commission the detailed description of how that well was completed?

A The Amerada No. 1, State B.T.A. was drilled on the Devonian, which was topped at 10,734. Drill stem tests were taken in the Devonian where we had flowing oil production. The well cemented casing, that is 5½ inch casing at 11,200, and continued to drill the rest of the section above the basement. Those tops below the Devonian were called as follows: --and these are Schlumberger tops. The top Montoya was called at 11,344; the top of the Simpson at 11,604; the top of the Ellenberger, 11,670; and the top of the basement, 11,709; a total depth of 11,766 was reached.

This well was then plugged back, casing perforated in the Devonian at 11,000 to 11,015. The drill stem test was taken

which was opened 8½ hours with a recovery of 4,000 feet of oil plus 640 feet of salt water. The perforations were squeezed with cement and the casing was re-perforated 10,950 to 965. This well was then acidized with 250 gallons of acid and was completed for i.p. of flow 400 barrels of oil and 5½ hours, that is, through 1/2 inch choke, gas-oil ratio of 28 to 1; gravity of oil 44.4.

I would like to make a correction on the completion date. That was 7-26-49.

Q You mean, July 26, 1949?

A July 26, 1949, right.

Q What in your opinion is the top of the pay section?

A The top of the pay section, we consider as 10,790 feet.

Q And what, in your opinion, is the base of the pay section?

A The base of the pay section would be at approximately 10,980, that is, 15 feet below the top of the perforations where we completed the well.

Q Mr. Veeder, the map marked --

MR. ADAIR (Interrupting): Excuse me. I wasn't following you; I didn't get your last statement as to the base of the pay section. Would you mind repeating that?

THE WITNESS: Well, the base of the pay section, we would consider as being 15 feet below the last perforations where we completed the well.

MR. ADAIR: In feet, what is that?

THE WITNESS: That would be 10,980.

Q (By Mr. Kellough): Mr. Veeder, Applicant's Exhibit No. 1 is a map of the area -- shows by a red line the area which is asked to be covered by this spacing application. Does that area represent the probable productive area of this producing formation?

A That is so, to the best of our knowledge at the present time.

Q This map further shows other wells drilled or now drilling in this area. Would you please, for the information of the Commission point out the other wells shown on the map and explain to the Commission the present status of those wells?

A Other wells in this area completed are the Amerada No. 1, State B.T.C., located in the SE¼SW¼, Section 35, 11 South, 33 East. This well reached a total depth of 10,980, with a Schlumberger call on the top of the Devonian as 10,662. The well was completed as follows: 7-5/8" casing at total depth, 10,980. Casing perforated 10,959 to 79 with 80 shots. Well completed with i.p. of flow at the rate of 1127 barrels of oil, 24 hours. Gas-oil ratio of 33 to 1 with a gravity of 46.2.

Another well completed by Amerada in this area is the Amerada No. 1, State B.T.D. This well is located in the SE¼SW¼, Section 2, Township 12 South, Range 33 East. This well reached a total depth of 10,995. We called the top of the Devonian at 10,870. Completion history as follows: Total depth 10,995; 5½" casing, 10,980; acid 500 gallons; i.p. flow 800 -- 929 barrels of oil in 24 hours and 1/2" choke; gas-oil ratio, 32 to 1, with a gravity of 45.5.

Q Now, any other wells which have been completed in this area?

A There is one other well completed for an oil well in the Devonian, which was completed by Texas-Pacific. This well is in the SE¼SE¼ of Section 2, Township 12 South, Range 33 East.

Q Now, will you point out to the Commission the wells which are now being drilled in this area?

A Those wells now drilling are the following: The Amerada No.2, State B.T.D., which is located in the NW¼SE¼, Section 35, 11 South,

33 East. This well is drilling in the Permian at a depth of 7,000 feet.

Amerada is also drilling No. 1, Simmons, located in the NW¼NW¼, Section 11, 12 South, 33 East. This well is also drilling in the Permian at 3685.

One further well drilling is a Texas and Pacific, No. 1, State C, which is located in the NW¼NE¼ of Section 2, 12 South, 33 East; and this well is also drilling in the Permian below 4,000 feet.

Q Now, there are two additional wells shown on the map by small dots. Will you describe those wells?

A The two wells shown as small dots are Permian wells. The one well is Mid-Continent No. 1, State 65, which is located in the SW¼NW¼ of Section 1, Township 12 South, Range 33 East.

The other well is the Amerada No. 1, Caudle. This well is located in the SE¼NE¼ of Section 10, 12 South, 33 East.

Q Then, neither of those wells is producing from the formation sought to be covered by this application, is that right?

A That is right.

Q Mr. Veeder, from the samples which you have seen from the wells just described, do you have an opinion with reference to the quality of this producing formation?

A I would say that from the samples and cores I have seen, I would say it had good porosity and apparently permeability.

Q Are you familiar with any other pools in the vicinity which are also producing from the Devonian formation?

A Similar pools, I would say, would be the Hightower Pool to the south; the Crossroads Pool; Jones Ranch Pool, and also the Knowles Pool.

Q Would you compare those pools which you have named, geolo-

gically with this Bagley Pool?

A I would say all pools are producing from the upper part of the Devonian.

Q Do the pools which you have named generally have the same type of porosity?

A All pools have what we would term as solution type porosity.

Q Mr. Veeder, does the production history of these other pools, as well as the information which you have from the wells in the Bagley Pool, substantiate your opinion that this is a reservoir of good porosity and permeability?

A That's right. Our completions to date would compare with wells in the other pools.

MR. KELLOUGH: That's all.

MR. ADAIR: Excuse me, Mr. Kellough --

COMM. SHEPARD: Give your name, please.

MR. ADAIR: Eugene T. Adair, representing the Texas-Pacific Coal and Oil Company. Mr. Kellough, do you intend to have this witness inform the Commission and other operators present, the allowable that you ask to be assigned to 80-acre units?

MR. KELLOUGH: Not by this witness, but we have another witness.

MR. ADAIR: If the Commission please, then, I request the Commission to defer my cross examination of this witness until that information is in the record.

COMM. SHEPARD: Granted.

MR. KELLOUGH: Mr. Christie, will you take the witness stand?

R. S. CHRISTIE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By Mr. Kellough:

Q Will you please state your name to the Commission?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Ft. Worth, Texas.

Q And by whom are you employed?

A The Amerada Petroleum Corporation.

Q In what capacity are you employed?

A Division Petroleum Engineer.

Q And how long have you been an engineer for Amerada?

A Since 1929.

Q Now, you have previously testified before this Commission in your capacity as an engineer, on engineering matters?

A Yes, sir.

Q Mr. Christie, you are familiar with the Amerada B.T.A. No. 1 well about which Mr. Veeder testified, are you not?

A Yes, sir.

Q Do you have any information with reference to the bottom-hole pressure of that well?

A Yes, sir.

Q Will you please give the Commission the information you have?

A The most recent bottom-hole pressure taken on the State -- Amerada State BTA No. 1 was taken in November, '49. The static bottom-hole pressure at that time was 4247 pounds. That was some four months after the well was completed. At the same time, we ran a 24-hour flow test on the well. It showed a production activity index of 4.5 barrels of oil per pound drop in the bottom-hole pressure, flowing at the rate of 50 barrels per hour.

Q Mr. Christie, is that a daily production activity index?

A That is a daily production activity index.

Q What, in your opinion, is the source of energy of this Bagley reservoir?

A Water drive.

Q What is the cost of the discovery well?

A The discovery well cost approximately $312,000.00.

Q And what, in your opinion, is the estimated cost of future wells?

A We estimate the average cost of future wells would be approximately $225,000.00.

Q Mr. Christie, do you have an opinion as to the area which may be effectively drained by one well from this reservoir?

A In my opinion, one well will adequately drain 80 acres -- at least 80 acres.

Q Then, in your opinion, a proration unit of 80 acres, or one-half of a quarter section, would represent that area which may be efficiently and economically developed by one well, is that correct?

A That is right.

Q And you recommend to this Commission that a proration unit of 80 acres be established for this pool, is that right?

A Yes, sir, I do.

Q Now, will you state to the Commission what recommendations you have with reference to the location of the various units in the area; and will you please take Exhibit No. 1, the map, and point out to the Commission in brief, the location of those units?

A In the whole area?

Q Yes, not by description, but simply tell the Commission how you recommend that the units be established in this area.

A We would recommend that the wells be drilled in the center of the Northwest 40, and the Southeast 40, of each quarter section.

Q Now, what is -- let me put it this way: Do you recommend then, that the 80-acre units comprise the East half and the West half of each quarter section?

A Yes, sir, with the -- except where it is necessary to make exceptions.

Q And the dotted line on the map shows the exceptions which you are recommending?

A That's right, yes, sir.

Q Do you have any recommendation to make with reference to the Mid-Continent well located in the SW¼NW¼ of Section 1, 11 South, Range 33 East?

A If the Mid-Continent No. 1 State well should be carried to the Devonian, we would suggest that be made an exception to the spacing pattern because the well was started prior to the completion of the discovery well in the pool.

Q Now, do you have any recommendation with reference to the future off-pattern wells which may or may not be granted by the Commission?

A Well, it would seem reasonable that if a well is located off-pattern, that the well should be penalized in the allowable, and cut to some extent determined by the conditions surrounding that particular tract, which will be brought out in evidence, I presume, at an open hearing if our request is granted.

Q It is your recommendation, then, that reduction in the allowable be not any fixed formula, based upon surface acreage for smaller units, or that it neither be based upon necessarily productive or non-productive acreage in the unit; but it is your

recommendation that in the event there is an off-pattern well drilled, that the Commission, from the evidence submitted, determine to what extent the allowable should be reduced? Is that a correct statement of your recommendation?

A That is correct. I think each well presents a separate problem of its own.

Q Now, Mr. Christie, what recommendation do you have with reference to allowables?

A Until such time as we have sufficient reservoir history and producing history of the reservoir, we would recommend the top 40-acre allowable, with the deep-pool adaptation. At this time, it would be approximately 197 barrels, I believe, for that depth.

Q Now, is it your further recommendation that regardless of the exact boundaries encompassed by this red line, that the order cover the reservoir or the common source of supply as it is developed?

A Yes, that is correct. I think the entire reservoir should be included in this spacing pattern if it develops there are tracts outside the designated area at this time.

Q Do you have any special field rules which you wish to recommend?

A No, we suggest the State-wide rules apply in this case.

Q But you do recommend a tolerance of 150 feet in any direction to avoid surface obstructions, is that correct?

A Yes, that is correct.

Q Mr. Christie, are you familiar with any other Devonian pools in this area which you may wish to compare with this pool?

A Yes, sir. I am familiar with the Hightower area and the Knowles area in New Mexico, and the Jones Ranch area in Texas, which is just across the Texas-New Mexico State line.

Q Now, those pools are being produced on 80 acres, is that correct?

A Yes, sir.

Q Will you describe in what way they are comparable, if they are comparable to this Bagley Pool?

A The Jones Ranch Pool is approximately four years old, and therefore we have a four-year-old history on that particular pool; and it also, as testified by Mr. Veeder, is a Devonian reservoir. The bottom-hole pressures reflect the Jones Ranch reservoir to be a water-drive field. The allowable is slightly higher than the allowable would be in wells of this depth in New Mexico, but there seems to be no particular damage to this reservoir producing at that rate and under that spacing pattern.

MR. McCORMICK: How deep is the Jones Ranch Pool?

THE WITNESS: The Jones Ranch Pool is between -- below 11,000 -- between eleven and twelve thousand feet.

MR. SPURRIER: What is the allowable?

THE WITNESS: The allowable is 240 barrels. Of course, we have a number of shut-down days, you know, over in Texas at the present time, so that the average allowable would probably be less than 197 barrels now, per day.

Q (By Mr. Kellough) Is it your opinion, Mr. Christie, from your experience with the Jones Ranch Pool, and also the information you have here, that the pool, this pool, should be developed on the uniform spacing pattern, with 80-acre units, which we are now recommending?

A I certainly think it would be desirable, yes, sir.

Q In your opinion, would that prevent the drilling of unnecessary wells, and prevent waste?

A Yes, sir, it would.

MR. KELLOUGH: That's all.

MR. McCORMICK: Mr. Christie, how deep was the Amerada Caudle well in Section 10?

THE WITNESS: The original total depth?

MR. McCORMICK: Yes. Did you penetrate the Devonian? That's what I wanted to find out.

THE WITNESS: I believe Mr. Veeder could answer that more intelligently than I can.

MR. VEEDER: The total depth on the Caudle well was 11,083. We topped the Devonian at 11,008. We took a drill stem test from the top of the Devonian from 11,028 to 83. That drill stem test, open 4 hours, recovery 4410 feet of sulphur water, with no shoals of water.

MR. McCORMICK: How deep was Mid-Continent No. 1 in Section 1? Did it go to the Devonian?

THE WITNESS: No, it did not go to the Devonian.

MR. VEEDER: The total Mid-Continent was 3935, sir.

COMM. SHEPARD: Anyone want to cross examine?

MR. ADAIR: May I cross examine Mr. Veeder before I cross examine Mr. Christie?

COMM. SHEPARD: Yes.

CROSS EXAMINATION OF MR. VEEDER

Q (By Mr. Adair) Mr. Veeder, the tract upon which the discovery well in this area was drilled, or Amerada B.T.A. No. 1, was a farm-out from Texas-Pacific Coal and Oil Company, is that correct?

A I understand that is correct.

Q In other words, Texas-Pacific Coal and Oil Company assigned to Amerada its lease covering that 80-acre tract, and Amerada

obligated itself to drill a well, is that your understanding?
A That is my understanding.
Q In that farm-out, were there any restrictions made as to where you would drill your well on that tract?
A I can't say. I imagine there would be, but I can't testify as to the restrictions.

MR. ADAIR: Is there someone else here with Amerada who would like to answer that question if Mr. Veeder doesn't know? Mr. Millikan, do you know?

MR. MILLIKAN: I can't answer it. If you have the evidence there, perhaps you can put it in. I think the facts will stand on their own without expert testimony.

Q (By Mr. Adair) I hand you here a letter agreement between Amerada, which has been marked Texas-Pacific's Exhibit No. "A", and ask you, or any other Amerada representative present if they desire to examine that, and tell us whether or not that constitutes the farm-out agreement between Amerada and Texas-Pacific?

MR. KELLOUGH: Well, I wish to say to the Commission that we have produced here an engineering and a geological witness. This copy of a letter, which purports to be a farm-out agreement assigned by the Texas-Pacific Coal and Oil Company, is addressed to Amerada and was accepted by Amerada on October 13, 1949. I cannot say, and I can tell the Commission, I don't know whether it is the particular farm-out agreement, involving this lease, or not; but if Mr. Adair testifies it is, we have no objection to it's being introduced in evidence to show what it is. In other words, it may or may not be. If he says it is, I assume it is.

MR. McCORMICK: Does the T.P. so state?

MR. ADAIR: That is the only one we have with Amerada.

MR. McCORMICK: It will be accepted then.

MR. ADAIR: Covering this.

MR. McCORMICK: Yes.

MR. ADAIR: Without taking the time, if the Commission please, to read it, if I may state into the record, that this is the agreement and there are no restrictions as to where the well will be drilled on the 80-acre tract, nor are there any restrictions or provisions calling for 80-acre spacing. We request that it be received in evidence.

COMM. SHEPARD: It will be received.

(Tex-Pac. Exhibit No. "A" was received in evidence).

Q (By Mr. Adair) Now, Mr. Veeder, you testified as to the top of the Devonian, as to where you picked the tops in the various wells drilled?

A That's right.

Q Which is the highest well in the field from the standpoint of the top of the Devonian formation?

A The highest well in the field is the Amerada No. 1 State B.T.C. That well is located in the SE¼SW¼, Section 35, 11 South, 33 East.

MR. SPURRIER: Mr. Veeder, excuse the interruption. In describing these wells, let's cut out the exact description because from this sheet we have here, it is obvious which well you are talking about.

THE WITNESS: All right.

Q (By Mr. Adair) Now, the next highest well on the Devonian?

MR. MORRELL: If the Commission please, we can't hear. What was the top of the Devonian formation on the Amerada No. 1 State B.T.C.?

THE WITNESS: The Schlumberger top, our call on that was minus 6410.

MR. MORRELL: And the depth was --

THE WITNESS (Interrupting) That equivalent depth would be 10,662.

Q (By Mr. Adair) And the next highest well on the Devonian formation in the field was what?

A The next highest well on the Devonian in the field, on our Schlumberger correlations would be the Texas and Pacific No. 1, State B.

Q Would you give the top again on it?

A Our calling on that well would be a minus 6479.

Q So looking at your figures here, your B.T.C. is approximately 69 feet higher on the Devonian than the Texas-Pacific No. 1, State B well?

A That's right.

Q Now, the next highest well on the Devonian field?

A The next highest well would be the discovery well, Amerada No. 1, State B.T.A.

Q And the subsea datum on that is what?

A Minus 6495.

Q And the next highest well in the field -- that only leaves one, excuse me, the B.T.D. That is the next, is that correct?

A That's right.

Q What is the subsea datum on that?

A The subsea datum on that is minus 6620.

Q Mr. Veeder, you have picked the top of the Devonian right at the bottom of the black shale zone that lies at the bottom of this formation, is that right?

A Right, and use a Schlumberger correlation.

Q In order to correct your sample logs?

A That's right, to get away from the human error, we would

rather accept the Schlumberger tops.

Q In addition to human error in picking tops of formations, you also have an error caused by the lag of the samples coming from the bottom of the holes up to the surface, don't you?

A That's right.

Q There is a tendency there, is there not, for your samples to carry over from previous formations that you have cut, or higher formations you have cut through, is that not correct?

A That would depend largely on the condition of your hole, yes.

Q I noticed one or two sample logs -- it may not have been your work or it may not have been Amerada's work, -- on your B.T.A. well, it appeared, for example, there was a shale carry-over all the way down to the bottom of the hole, that was possibly a result of the carry-over from drilling through black shale formation, and then the samples remain in the mud until you get down through the formation.

A I don't believe you can drill a well without having some degree of carry-over, as you say.

Q Regardless of the formation you went through, you would have some carry-over?

A In an un-cased hole, that is right.

Q So that due to the error you mention and the carry-over and the lag in your sample that you will have, it is extremely difficult to be accurate in picking the top of any formation, is that not correct, that that alone --

A (Interrupting) I should say by samples that would be a -- there would be a variance in the tops.

Q And by the same token, it would be difficult to pick any intermediate zones within a single formation such as the Devonian formation? In other words, the top of your pay -- it would

be difficult to pick the top of your pay within the Devonian formation by samples alone and well cuttings alone, is that correct?

A I would put a limit on that, in the difficulty to pick it as to feet, right.

Q What would you consider a reasonable error? Thirty feet, forty feet?

A No. I think on particular wells that are lagged -- samples are lagged, such as we handle our samples, I should say it should be within three to five feet.

Q Now, you picked the top of the pay section distinct from the top of the Devonian section down in the Devonian, is that right?

A That --

Q (Interrupting) In other words, there is a dense area, or an area of no porosity up on the top of the Devonian section, that doesn't produce oil, is that correct? In the well so far drilled, is that correct?

A Right.

Q Where do you pick the base of the pay section, at the water-oil contact, is that where you pick the base of the pay section?

A We would roughly say so.

Q Where have you determined the water table to be, subsea datum point?

A For the discovery well we used a minus 6,75.

Q Have you cut the water in any other well drilled in the field other than the discovery well, your B.T.A.? Didn't you attain water in your Caudle well?

A Yes, we drilled into water.

Q Did you find a water table there, essentially the same depth?

A On the Caudle, we took a drill stem test 11,028. That is

roughly the same depth, yes, sir.

Q Then you assume from the information that you have available at the present time that the field is underlaid with a level water table, is that correct?

A Right.

Q Now, it has been testified here that -- and I believe you testified that you have determined in your opinion that the field is both porous and permeable, is that your statement?

A I said it was porous, right.

Q And you also testified that in your opinion it was also permeable?

A Apparently permeable.

Q And you determined -- you made that determination from well cuttings?

A And cores.

Q And what well have you cored, or on what well has core information been available to you?

A The only well we have core information on, is your well, the Texas-Pacific producer.

Q Do you have the advantage or the benefit of a core analysis in that well?

A I do not.

Q You merely base your opinion upon an examination of the core, is that correct?

A That is correct.

Q Did you examine it yourself?

A I did.

Q What methods are used by geologists to determine the perema-bility of a reservoir, Mr. Veeder?

A The geologist can only determine the apparent permeability.

Q Will you distinguish for the benefit of the Commission here and for the record, between porosity and permeability?

A Surely. Porosity is your openings in a formation. Your permeability would be considered as your connections between your openings.

Q In other words, porosity is the space that holds the oil, and permeability are the pipes that carry the oil to the well hole, does that state it in a rough way; is that more or less correct?

A Right.

Q And permeability is more or less a measure of the rate of flow, is that correct?

A Yes.

Q The flow of oil through the reservoir?

A That is right.

Q So for one well to drain 80 acres that has been requested and recommanded here, you must assume a more or less uniformly high degree of permeability throughout the entire reservoir, is that correct?

A That is right.

Q And similarly, you must assume the same degree of uniformly high permeability throughout each 80 acres, or 80-acre unit in the reservoir?

A Right.

Q And if there are any dense zones or dense streaks within the reservoir, you do not have that uniformly high degree of permeability necessary for one well to drain 80 acres? When we are talking about draining 80 acres -- before you answer the question -- by that I mean, drain all recoverable oil under the 80-acre tract.

A Well, of course, if you have a dense zone, you don't have --

you will have no permeability in that particular zone, that's right.

Q So you would say then that if your reservoir contained dense areas and dense zones and dense streaks, you would not have the uniformly high degree of permeability necessary for one well to drain 80 acres, is that correct?

A You would not be able to recover oil that is not there, that is correct.

Q Wouldn't there be some oil that would be trapped behind the dense zones that wouldn't get to the well hole on the basis of one well to 80 acres?

A Not any more than wells in smaller locations, I would say -- smaller spacings.

Q In other words, your testimony is that one well will drain as much recoverable oil as two wells in an 80-acre tract?

MR. KELLOUGH: Now, just a moment, please. I do not want in any manner to thwart the cross examination, but counsel is asking questions about reservoir engineering about which this witness did not testify, and about which he is obviously not called on to answer. We have an engineer present. And if he was a reservoir engineer, why we could qualify him as such and he could make him his own witness, if he wants to; but he is not qualified in that respect.

COMM. SHEPARD: Do you have a witness here who could testify to that later?

MR. KELLOUGH: Yes, we have a witness, Mr. Christie; and we also have Mr. Millikan and we would be glad to put him on the stand.

COMM. SHEPARD: Then you can question them, Mr. Adair.

MR. ADAIR: All right, sir.

Q (By Mr. Adair) Now, I don't think the answer to this question requires any engineering information, Mr. Veeder. Assuming the same rate of flow from each well, two wells on an 80-acre tract will produce more oil in a given length of time than one well located on an 80-acre tract, will they not?

A If you have the same allowable?

Q Same rate of flow.

A Well, that is apparent.

Q That is correct, is it not?

A Yes.

Q As you say, that is apparent. So in order to take care of the royalty and lease operator and the State, who wants its taxes; the royaltor only wants to spend his money during his lifetime -- you have to increase the rate of flow from one well on 80 acres to the point that it will drain the 80-acre tract, in substantially the same length of time as two wells on the 80-acre tract?

MR. KELLOUGH: If the Commission please, I would like to request the Commission to ask Mr. Adair to limit his questions to questions of the witness. If he wishes to make a closing argument, I am sure he will have an opportunity to do so. I think it would simplify the proceeding if he be instructed to ask the question rather than to engage in argument.

COMM. SHEPARD: You may go ahead, Mr. Adair; but they have other witnesses, probably, who are better qualified to answer the question, so try to cut it down.

THE WITNESS: I would rather stay with the geology. That's my field.

MR. ADAIR: The point, if the Commission please,, -- Amerada has actually closed their main case as to the hearing

and they have presented the testimony of a geologist and an engineer, and some of these matters were not covered. We think that in asking for 80-acre spacing -- fixed-pattern spacing, that these various possibilities and probabilities should be considered not only from the standpoint of the argument but from the standpoint of the witnesses, who are the only ones available who can testify with reference to it.

MR. KELLOUGH: But we contend that whether the State collects taxes and how much, and whether the individual spends his money in his lifetime, is not the interest in this particular hearing.

MR. ADAIR: Let me re-word this question then, and eliminate those factors.

Q (By Mr. Adair) In order to drain 80 acres within a reasonable time with one well, as compared to two wells on 80 acres, you would obviously have to give the one well a higher allowable, wouldn't you?

A No, it is just a longer period of time to drain the acreage.

Q I said, within the same reasonable time.

A If you're working on the same time, yes.

Q And here again, if this is an engineering question and you don't prefer to answer it, we will let Mr. Christie answer it later. And, assume that you give such a well this higher allowable in order for it to support the higher rate of flow. You must assume again the uniformly high degree of permeability through the reservoir, is that not correct?

A State your question again.

Q Assuming that we have given this one well on one 80-acre tract a higher allowable in order that it will drain a recoverable amount of oil within substantially the same time as two

wells, you have to assume the same uniformly high degree of permeability throughout the 80 acres, the 80-acre tract, and throughout the reservoir so that it will support this increased rate of flow, don't you?

A In general, I guess that's right.

Q Now, in your examination of the well logs and Schlumberger logs in the field, did you notice any abnormalities within it, such as dense zones and streaks?

A I have not.

Q Would you say if they are found in one well, it is reasonable to expect them to be found in all of them?

A I have found, in all wells examined, in what evidence we have had, we see no separation. It is a continuous porous zone.

Q A continuous porous zone?

A Right.

Q But that is not an answer to my question. If such a dense zone were found in one well, is it reasonable to assume that it might be present in other wells drilled?

A If we have found that dense zone. We have not found it.

Q And the only way, though -- due to the lag in samples, as you testified awhile ago, and the human element in picking samples, the only way you can be sure of a dense zone is by coring?

A That's right.

Q So as to determine the dense zone. By the samples, even though your depths might be three feet off, your dense zone would still be there in your section.

A Right.

Q And you can determine it by samples. Now, you have had available to you, samples of all wells drilled so far, and that

is the way you have of making your examination, based upon the samples from all Devonian wells in the field, is that correct?

A Yes, sir.

Q And by the same token, you have examined the Schlumberger surveys of all the wells in the field?

A Yes.

Q Let's talk a minute, Mr. Veeder, about the characteristics of Devonian structures and these Devonian fields you mentioned a minute ago, of Hightower, Knowles and Crossroads Pools. Are or are not these Devonian reservoirs characterized by steep dips on one side or another?

A I would say some of them are. We don't have enough evidence on all the fields mentioned.

Q Are they not also sometimes characterized by faulting?

A Faulting has been interpreted in one particular field, I would say.

Q In the Crossroads Field Pool?

A That's right.

Q Do you agree with that interpretation?

A It can be interpreted as such.

Q In such a case where you have very steep dips or faulting, it is possible to go from productive to non-productive from one end of an 80-acre tract to the other, isn't that right?

A That's right.

Q That was the case in Crossroads, was it not?

A In which particular instance are you talking about?

Q In the Santa Fe application?

A Which well?

Q Just a minute. I think the matter I am referring to is a

matter of public record, which the Commission has heard and is probably familiar with. The well to which I refer is this well here. (Indicating). It is upside down. Will you identify it?

A That's right. That is the Santa Fe well, and that is a low well. It would -- I would not say that that definitely had to be on the down-flow side of the fault.

COMM. SHEPARD: Which well is that?

MR. ADAIR: This well, if the Commission please, was considered in the Santa Fe's application for an exception. They drilled a dry hole on fixed pattern spacing on this side and asked for an exception, to drill over here where they thought the oil was present.

Q (By Mr. Adair) Let's look at the Hightower Field, Mr. Veeder. Would you say that the Devonian structure was characterized by very steep dips?

A On the wells we have evidence of, there are steep dips, by the three wells drilled at the present time.

Q On the wells drilled at the present time. Will you tell the Commission how much lower on structure, your Amerada No. 1 roach is than on your discovery well?

A That is another field. I could give that roughly.

Q I mean, you and Mr. Christie testified as to these fields being characteristic of Devonian reservoirs. Now, is it not true that your Amerada No. 1 roach drilled under a fixed pattern, 80-acre spacing plan, granted by the Commission, was dry in the Devonian 1 location south of the discovery well?

A That well was dry. I cannot say that the location was authorized by the Commission.

Q No, I didn't mean to say that location was authorized by the

Commission. I mean, it was on fixed pattern, 80-acre spacing plan.

A Right.

Q That is correct, isn't it?

A That is right.

Q Now, had that well been drilled on the 40-acre tract, part of the 80-acre unit closest to the discovery well, 330 feet from the unit line as authorized by the present State-wide rules, that well might have produced oil, might it not?

A And also, that well might have been a dry hole.

Q You had water in the Devonian, did you not?

A I beg your pardon?

Q You had water in the Devonian.

A Under roach?

Q Yes.

A We did. I mean, if we had moved it to the north, there is the possibility it could have been a dry hole.

Q And also, there is the possibility that it could have been an oil well?

A That's right. We did not know that when we staked the location.

Q That's the point I'm making. Fixed patterns of 80-acres result in dry holes, don't they?

A In all steps, wherever you make a location, I don't care what the spacing is, you take a chance on a dry hole.

Q The 80-acre spacing in the Crossroads Pool resulted in a dry hole, didn't it? Whereas, had it been drilled in the 40 closest to the production, 330 feet from the 40-acre line as permitted by State-wide rules, it would probably have gotten an oil well, wouldn't it?

A I couldn't say whether there would have been any oil. The well has not been drilled.

Q I'm asking your opinion.

A I would say you do not have the evidence of it.

Q You have no opinion?

A You're closer to production, but still it is a gamble.

Q The closer you are, would you state, to production, the less chance of getting a dry hole?

A Under normal conditions.

Q So, we have two cases in the two reservoirs which you have mentioned, the Devonian reservoirs, the Crossroads and the Hightower, where conforming to fixed-pattern, 80-acre spacing, resulted in dry holes, and you admit the possibility at least of their having gotten oil wells had they moved closer to production, 330 feet from the lease line as permitted by State rules?

A That is correct. Well, there is the same possibility when they started the well that is a dry hole now.

Q We are talking about the results as known now.

A I understand it is a dry hole, that's correct.

Q That is correct. All right, sir. Look at the Knowles area, which you testified about. There Amerada drilled its discovery well, its Hamilton, in the center of a 40-acre tract.

A That is correct.

Q While we are trying to find a Knowles map, Mr. Veeder, I have one more question about this Hightower area. There is another well presently being drilled, is there not, on the fixed pattern, 80-acre spacing, in the Hightower area, which is Gulf No. 1 well, located diagonally to the northwest of your discovery well?

A That's right.

Q Do you have any information? Has it as yet discovered oil on the Devonian?

A I have information -- no, I haven't information that it has oil or water in the well.

Q Is it not true, it is over 500 feet low to the discovery well on the Devonian?

A I believe that is untrue.

Q How much lower is it?

A Roughly, according to memory, I would say a little over 100 feet.

Q Over 100 feet low?

A That is my memory.

Q In total depth, how much deeper is it than your discovery well in Hightower?

A I do not have that information with me on Hightower.

Q Our information -- and we will put it on by witness -- this is our information, some 575 feet lower, and still no oil.

A There are Schlumbergers on those two wells.

Q That is our information. We will have a chance to examine our geologist on it. Now, getting over to the Knowles Tract. The hearing was held on that here not long ago, and the Commission, I think, is familiar with that.

MR. McCORMICK: No, the order has not been signed.

MR. ADAIR: I didn't mean to infer it had. I meant the hearing had been held on it.

MR. McCORMICK: Yes.

Q (By Mr. Adair) Your Amerada discovery well in the Knowles Pool was drilled in the center of a 40-acre tract, is that correct?

A I believe that's right.

Q You do not know of your own knowledge?

A I can probably get it from the gentlemen around here. I'm sure someone here has it.

Q Then your second well in the Knowles Pool was drilled on the 40-acre tract immediately north of the discovery well, is that not correct?

A Is that correct, Mr. Christie? Yes, that is correct.

Q And the third well drilled in the Knowles Pool, also by Amerada, was drilled in the 40-acre tract immediately south of the discovery well, is that not correct?

A That is correct.

Q So that so far as those three wells are concerned, you have essentially 40-acre spacing? You have them on three adjoining 40-acre tracts, that is correct is it not?

A I can say, well -- that is correct with the exception that the north well was -- the location was made originally for a Permean test.

Q But the point is, the three wells have been completed in the Devonian on adjoining 40-acre tracts; all three are producing oil wells, is that not correct?

A That's right.

Q So we have the situation here of two places where you have 80-acre fixed pattern spacing which resulted in dry holes; in the Hightower, three wells drilled, one dry for sure, and one running mighty low; while, in the Bagley, where you have drilled and developed on 40 acres, you have three wells drilled, and three oil wells.

MR. KELLOUGH: Are we just asking for understanding, or asking a question.

MR. ADAIR: That is correct.

A You have four wells at Bagley, I believe.

Q (By Mr. Adair) Of the three I asked you about all three --

A (Interrupting) Bagley, that is the area you are talking about?

Q I'm talking about Knowles.

A Yes, three at Knowles.

Q Yes. Was my statement correct?

A Essentially so.

Q In what respect was it wrong, Mr. Veeder?

A I misunderstood you about the number of wells in Bagley.

Q In Knowles you mean?

A In Bagley -- you said Bagley.

Q If I said Bagley, correct it to three wells in Knowles, I'm sorry. Now, Mr. Veeder, did you say definitely that the conditions which resulted in dry holes in Crossroads and Hightower did not exist within the limits of the Bagley Devonian reservoir?

A We don't have enough information at the present time to say either yes or no.

Q And by the same token, you do not have enough information then at the present time to say that 80-acre fixed-pattern spacing should be placed into effect?

A Yes, I think we do. You have to have a spacing.

Q Are you familiar with the Shafter Lake Devonian Field just across the line in Andrews County?

A Yes, to what extent?

Q Where it is located geographically?

A I am.

Q Do you know whether or not it developed on 40 or 80-acre spacing pattern?

A Yes, I think it has been developed on 40.

Q Are you familiar with the Fullerton Devonian Field, located across the State line in Andrews County, its geographical location?

A Is that the Fullerton Pool or Field?

Q The Fullerton Pool.

A Right.

Q And do you know whether it developed on 40 or 80-acre spacing?

A The pattern would be considered as 40.

Q Now, one last question, Mr. Veeder, on this particular subject. In what way do the rules that you propose here, fixed pattern, 80-acre spacing, in what way would they prevent waste?

A In this way: we figure we have good porosity and good permeability. If we drill one well in an 80-acre tract, it would cover the same amount of oil -- I'm not going to make that a time limit -- as if we drilled two wells in that same 80 acres. That certainly would be a saving.

Q To whom?

A Well, I think it would be a saving to everybody in the end. That is just waste, waste of materials and whatever you want.

Q Who pays for the second well?

A Well, the operator, if you are talking about the operator's lease.

Q In this area, you also have a Pennsylvanian formation that is productive, do you not, in the Bagley area?

A That's right.

Q Is it co-extensive with the Devonian, that is, does the Pennsylvanian produce everywhere where the Devonian does, and vice versa?

A To date, all wells have had either gas or distillate showings

on drill stem tests.

Q In the Pennsylvanian?

A In the Pennsylvanian.

Q And to date one well has been dry in the Devonian?

A That's right.

Q Indicating at least that they are not productive, each zone is not productive throughout?

A Each well would not produce out of both zones, is that what you mean?

Q And by the same token, each 40-acre tract might not produce in each zone, is that not a probability?

A That is possible.

Q So that in forming an 80-acre unit out of two separately owned 40-acre units, you would have the difficulty of adjusting correlative tracts, based upon one 40 acres possibly being productive in both zones, and the second 40 being productive in the Pennsylvanian only?

MR. KELLOUGH: May I interrupt a minute? This application which we filed asked for spacing in the Devonian. Now, if he intends to ask that the Pennsylvanian formation be included, that, I understand, is a separate reservoir. I don't believe it is proper proceeding. He is asking this witness now if he is going to encounter difficulties in trying to pool the Denovian oil with the Pennsylvanian oil. I don't know that it has anything to do with this. It is already determined as two different pools.

COMM. SHEPARD: We will confine ourselves to the application, Mr. Adair.

MR. ADAIR: If the Commission please, I believe I am doing that. Their application here and certainly their exhibit

would indicate that the Amerada had declared themselves partners in with us in the well presently drilling in No. State B.C. 1 or C. 1, it is, and would indicate in order to form that unit, some pooling or unitization or something would be necessary. Also, it would indicate that down in the S½SE¼ of 2, that additional pooling was necessary. Their state ownership map here -- I mean, ownership map here, indicates separately owned 40-acre tracts, either by fee ownership or by lease ownership; and that in order to form their 80-acre units, it would be necessary to pool.

MR. McCORMICK: Possibly to pool as to the Devonian, not as to the Pennsylvanian, isn't it, Mr. Adair?

MR. ADAIR: I don't know, sir. I have been advised by New Mexico counsel that there is considerable doubt as to whether the state can prove by zone, and I'm not attempting to answer that question.

MR. McCORMICK: Well, if you farm out a lower zone, you could also pool a lower zone, couldn't you?

MR. ADAIR: I don't know. Now on unitization, you had better ask a New Mexico lawyer about that. I prefer not to try to answer. It sounds logical that you could do so. But under unitization, talking about state unitization, I understand that the lease itself has to be unitized. There is no provision in the statute for unitization of zones.

MR. McCORMICK: Isn't that usually accomplished by the operating agreement?

MR. ADAIR: Yes, sir, generally entered into prior to the time the well is started. I merely wish to indicate that in any pooling or unitization, the question is going to be complicated due to the fact that you have two productive zones in the area

rather than one.

Q (By Mr. Adair) Mr. Veeder, would you kindly point out on the map that has been placed in evidence here, the various 40-acre tracts on which Amerada has a lease, on which there are either over-riding royalties outstanding, or oil or production payments outstanding, particularly with reference to the state leases?

A I do not have that information.

Q Would it be possible for you to get the information during the noon hour from someone representing Amerada?

MR. KELLOUGH: If the Commission please, in the interest of saving time, I will stipulate into the record what our files show with reference to the location of over-riding royalty interests.

Our files reflect there is an over-ride, and I am unable to state the amount or to whom --

COMM. SHEPARD: Doesn't matter.

MR. KELLOUGH: But our files reflect an over-ride which covers the W½NE¼ of Section 3. There is another over-ride which covers the NE¼NE¼ of Section 3. In other words, the NE¼NE¼, that is a 40-acre tract.

MR. MCCORMICK: Straight over-ride?

MR. KELLOUGH: Straight over-ride. Then the third over-ride covers the SE¼NE¼ of Section 3. The third over-ride covers the W½, and two more, covering the other two 40s. Now, coming down to the SE¼ of Section 3, there is an over-ride which covers the E½SE¼, and there is another one covering the NW¼SE¼, so there is a 40, and another 80 down there. Now, move over to the NW¼ of Section 2. There is one over-ride which covers the W½NW¼, Section 2. That same over-ride also covers the NE¼SW¼,

and the SW¼SE¼ of Section 2. In other words, it covers the 80 acres in the W½NW¼, and the two diagonal 40s.

Then there is a further over-ride which covers this tract. It is two 40s. It covers the SW¼NE¼ and the NW¼SE¼ of Section 2. That is an 80-acre tract. That is the unit in which the discovery well is located, and which I understand is a farm-out from T.P., and I believe the over-ride is to them. I can't say for a certainty, but my information is that is all the over-rides in that area.

MR. McCORMICK: What about payments?

MR. KELLOUGH: I'm speaking of oil payments and over-rides as one group. As a matter of fact, I think they are all oil payments. Perhaps a certain percentage is not oil, and a certain percentage is uncovered.

MR. McCORMICK: Well, the T.P. is.

MR. KELLOUGH: Well, that may be.

MR. ADAIR: Is that an over-ride there? (Indicating).

MR. KELLOUGH: I can't say.

MR. McCORMICK: May we have it identified for our people?

MR. KELLOUGH: He is referring to the NE¼NE¼ of Section 2, a 40-acre tract, and I cannot say for a fact. Mr. Adair is informed, and I'm going to accept that for your purpose in this hearing.

COMM. SHEPARD: We will stand in recess until 1:30.

MR. KELLOUGH: For the purpose of the record, I wish to offer in evidence all exhibits marked.

COMM. SHEPARD: They will be received in evidence.

(Applicant's Exhibits Nos. 3 & 4, received in evidence).

(Whereupon, at 11:50 o'clock, A.M., the hearing was recessed).

AFTERNOON SESSION

(The hearing re-convened at 1:30 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order, and you may proceed, Mr. Adair.

MR. ADAIR: Mr. Shepard, if the Commission please, we have no further questions of Mr. Veeder at this time. Thank you very much, Mr. Veeder.

MR. KELLOUGH: Before Mr. Adair continues his cross examination of Mr. Christie, I would like to ask Mr. Veeder a couple of questions on redirect.

COMM. SHEPARD: Go ahead.

REDIRECT EXAMINATION OF MR. VEEDER

Q (By Mr. Kellough) Mr. Veeder, I would like to clear up one point that might have been misinterpreted. You testified I believe, that this reservoir had continuous permeability, did you not?

A Yes, continuous porosity.

Q Continuous porosity.

MR. ADAIR: I didn't hear that. I'm sorry.

MR. KELLOUGH: I asked if he didn't testify that this reservoir had continuous porosity.

MR. ADAIR: And permeability, didn't you ask that, too?

A And I referred to it as apparently permeable, I believe.

Q (By Mr. Kellough) Now, did you intend to convey the impression to the Commission that it had uniform porosity?

A I did not. I meant the word as continuous, as I said.

Q It is not your testimony, then, that each and every part of the reservoir is equally porous?

A That's right.

Q But that there are some sections of the reservoir which are

more porous than others?

A Right.

Q There is a variance, in other words?

A There is a variance in the porosity.

Q Now, is that a typical characteristic of Devonian pools?

A Very much so, I would say.

Q One other point. On cross examination, you were asked with reference to the Hightower Pool.

A That is right.

Q I believe Mr. Adair assumed a set of facts whereby had you drilled a well on the 40-acre tract immediately south of the B.T.B. producing well, that you would have obtained a producing well?

A He gave that assumption.

Q He assumed that set of facts. From your information that you have of that reservoir, is that a correct assumption of fact?

A I beg your pardon?

Q Is that a correct assumption?

A I do not think it is.

Q Now, assuming that it is -- assuming the assumption, the set of facts assumed by Mr. Adair, that instead of dropping down to the 40-acre tract once removed from the B.T.B. well, that you had drilled another well immediately south of the B.T.B. well on the 40-acre tract immediately south -- assuming that you had done that; and further assuming as Mr. Adair did that you discovered an oil well, would you then have been required to drill an additional well at the location where the roach well was drilled?

MR. ADAIR: Just a minute, Mr. Veeder. I believe that

calls for a conclusion of law, as to what you believe, what you mean by required. I have no objection to you leading the witness any at all.

Q (By Mr. Kellough) Would you have recommended to your company that a well be drilled?

A That is right.

MR. ADAIR: What is right?

THE WITNESS: That I would recommend -- if you had a 40-acre off-set discovery well, B.T.B., and assume it made a good well, I normally would recommend a south off-set to it, which would be the well in question.

Q (By Mr. Kellough) The roach well?

A Yes.

Q The fact is, that was a dry hole?

A That's right.

Q Now, the result would be what?

A We would have two oil wells, and one dry hole.

Q And under the testimony given here, you would have two wells where one would recover the oil under that area?

A That's right.

MR. KELLOUGH: That's all the redirect I have.

MR. ADAIR: That brings forth one more question.

RECROSS EXAMINATION

Q (By Mr. Adair) If the royalty or over-ride royalty ownership happened to be different between the two wells that you drilled that resulted in dry holes, I mean, between those two tracts, the two adjoining 40-acre tracts, then the royalty owner under the South 40 would have never had a well drilled on his land, would he?

A I wouldn't know why not.

Q Put it this way: in view of the fact you have drilled a dry hole now on the fixted pattern location, you would not at this time recommend moving up on the 40 just to the north of the well?

A It wouldn't be logical.

Q And you base that opinion, in part at least, upon the dry hole, is that right?

A That is right.

MR. McCORMICK: Mr. Veeder, have you attempted to estimate the amount of oil in place in this Bagley area?

THE WITNESS: I have not.

MR. McCORMICK: Well, have you attempted to estimate the oil under place, under each 80?

THE WITNESS: The amount of oil in the field?

MR. McCORMICK: Under each 80?

THE WITNESS: No, I have not. My method has been by comparison, not as to the specific amount of oil, that is, to the barrel, that's what you inferred?

MR. McCORMICK: Yes.

COMM. SHEPARD: Any further questions?

MR. KELLOUGH: I have no further questions of this witness.

MR. ADAIR: No.

COMM. SHEPARD: Does the T.P. wish to offer any witnesses?

MR. ADAIR: If the Commissioner please, not until Mr. Christie is cross examined.

COMM. SHEPARD: Proceed.

MR. MORRELL; Foster Morrell, U.S. Geological Survey. I have one question from Mr. Veeder.

COMM. SHEPARD: All right.

MR. MORRELL: Mr. Christie, on the exceptions as to the spacings of the units that are cited on the map which you have, could you enumerate or specify those exceptions, specify the exceptions?

MR. CHRISTIE: You are asking Mr. Veeder that question?

MR. MORRELL: Mr. Christie testified on that.

MR. CHRISTIE: Those 80-acre tracts as outlined by the dotted line would be the exceptions.

MR. MORRELL: Well, I don't have the dotted lines.

MR. CHRISTIE: Well, they are in evidence with the Commission. (Document handed to Mr. Morrell).

MR. MORRELL: That answers my question.

MR. McCORMICK: Do you want to proceed with the examination?

MR. ADAIR: Yes, I would like to do so now.

CROSS EXAMINATION OF MR. CHRISTIE

Q (By Mr. Adair) Mr. Christie, I believe you testified that P.I. tests that you took indicated to you good permeability throughout the reservoir, is that correct?

A Yes, sir.

Q Now, in what well or wells were these P.I. tests taken?

A We have taken productivity tests on our B.T.A. No. -- State B.T.A. No. 1, State B.T.C. No. 1, and State B.T.D. No. 1.

Q For the purposes of illustration, will you get before you the data on the B.T.A. No. 1?

A Yes.

Q First, to save time, will you tell us how much of the pay section is open in that well?

A The pay section in the B.T.A. No. 1 is open between 10,950 and 10,965, or 15 feet.

Q And how much pay section did you have in that B.T.A. well in the Devonian?

A Maybe Mr. Veeder can give you that better than I can.

MR. VEEDER: The top of the pay would be regarded as 10,790, -- 190 feet.

MR. ADAIR: One hundred ninety?

MR. VEEDER: Yes, sir.

Q (By Mr. Adair) So actually, you are basing your conclusion on -- from 15 feet that is perforated out of 190 feet of what you consider the pay section?

A Yes, sir.

Q Now, actually a P.I. text would indicate permeability somewhere up or down the well bore in the pay section. It doesn't necessarily indicate uniform permeability or continuous permeability up and down the well bore, does it?

A It doesn't necessarily indicate that but we are --

Q (Interrupting) You are making that assumption?

A We are reasonably sure we have continuous permeability, if it is a water-drive field which we have testified to.

Q Actually, the drive which you get from your P.I. Test in the B.T.A. could be coming from the bottom, we will say, of the pay section, could it not, so far as you know?

A Well, it would be limited to the 15 feet, I believe.

Q That you have exposed to your well bore?

A Yes, sir, and if there is continuous permeability, it is possible that the area above and below that 15 feet, might be contributing to the production through the perforations.

Q Yes, sir. I notice you said, "if". It is possible, then, that there could be dense zones within the pay section, both above and below your perforations, that is possible, and wouldn't

be indicated one way or the other from your P.I. tests?

A No, I don't believe it would.

Q I believe Mr. Veeder said there was a dense zone at the top of the Devonian of various degrees of thickness, before you actually got into the pay section?

A That's right.

Q So, assuming a similar dense zone down in the pay section -- to put it this way: the P.I. test does not rule out those dense zones at all?

A No, sir.

Q All right. Now, Mr. Christie, what types of reservoir drives do you have? What primary types of reservoir drives do you have?

A Well, there --

Q (Interrupting) I notice you speak of water drive as one.

A Well, ordinarily speaking, there are three types of different reservoir drives -- water drive, gas drive, or gas cap.

Q Now, do we have a gas cap here ?

A No, we do not.

Q So that type of drive is not furnishing any energy in this particular reservoir, is it?

A Not to our knowledge, no, sir.

Q Now, how about your gas drive? Do we have an effective gas drive within this reservoir?

A No, I believe it is not contributing very much to the productivity.

Q In other words, if you had a gas drive alone, why, one well would not drain 80 acres, would it?

A Yes, it could easily.

Q I'm not talking geologically at this time now. I am talking about during your lifetime, or within twenty, thirty, forty years.

A Yes, if you had sufficient permeability, I think it would.

Q Now, I'm not talking about a gas drive as such. I am talking about the gas drive you have present in this reservoir. What was the highest gas-oil ratio you got on the Devonian?

A The highest was 33 cubic feet per barrel on Amerada State B.T.C. No. 1.

Q You could certainly say that the gas drive could not be very effective at all; would you not say that, from such a low ratio?

A Yes, I think that is reasonable to assume.

Q And they do not happen to have a bottom-hole flood analysis?

A No, we have not run a flood analysis -- a bottom-hole flood analysis.

Q So we have ruled, out of the three drives you have mentioned -- we have ruled out the expanding gas cap and the gas drive, as effective factors in drainage of this reservoir?

A Yes, thatis, initially, at least.

Q At the present time?

A I think that is correct.

Q So you hope that you have an effective water drive?

A Yes.

Q Or at least, a partially effective water drive?

A We hope we have an effective water drive.

Q I believe Mr. Veeder testified that you were of the opinion there was a level water table under the reservoir?

A That seems to be the indication at the presenttime, yes, sir.

Q Now, Mr. Christie, let's speak for a moment, if you will, in simple terms, so I can understand it, about the characteristics of a water-drive reservoir. You have, do you not, what would be, let's say, in the form of an inverted saucer or bowl, or something that serves as a trap for the oil coming up under-

neath it -- that type of structure?

A That's about as simply stated as you could state it, yes, sir.

Q To keep it simple, as I say, so I can understand it. And underneath that, you have a level water table?

A Presumably, yes, sir.

Q Now, the thrust or drive comes from the -- the water drive comes from the water pushing up the oil, is that what happens?

A It could be, or it could be horizontally from some entrance from the side, depending on whether your acquafer -- depending on the content.

Q Well, it could be deflected by dense zones, could it not?

A I don't understand the question.

Q All right. I'll start over again. The water coming up underneath the oil, is shoving it up into this structure that has trapped the oil above it.

A Yes.

Q As your oil is removed, the water table will presumably rise, and your water table will rise right up as the oil is removed, is that what you said?

A That's right.

Q So that the wells that are located on the flank of the structure will be washed out first, will they not?

A Yes, sir.

Q And the last well to produce oil on that structure would be the well that might be situated right at the apex or top of the structure?

A That is assuming that you have the same allowable and produce the same amount out of the wells.

Q So the fellow who has a lease down on the flat of a structure had better get his oil as it goes by; otherwise, he will never get it, is that correct?

A Yes.

Q In other words, your drainage is up-structure. Is that what you would say?

A Yes, sir. He is in a very unfavorable position if he is on the edge of a structure.

Q Now, what do you mean by saying he is in an unfavorable position, other than just the location?

A Well, just as you stated -- he will be -- his tract will be washed out before the well in the higher up structure will be washed out.

Q Now, with a water drive, such as you assume to be present here, what effect does unequal permeability have on that drive?

A I beg your pardon?

Q Now, originally here, we had testified, or we had assumed a uniform permeability throughout the reservoir.

MR. VEEDER: I beg your pardon.

Q (By Mr. Adair) Now that has been corrected, and you assume continuous permeability throughout the reservoir, is that correct?

A Yes.

Q And there may be zones of low permeability, or zones of high permeability.

A Yes, sir.

Q In a water drive reservoir, what effect, if any, do those various zones of unequal permeability have?

A Well, it would depend on your rate of production from individual wells. Ordinarily, we would expect the oil to travel

through the more permeable sections easier.

Q And first?

A Easier and first.

Q Followed by water?

A Yes, sir.

Q So you would have what is known as fingering or tonguing of of water going into the reservoir?

A Well, you might have if you produced at such a rate where you have a differential in pressure. If you maintain the pressure uniformly, I think it would flush out the less permeable streaks as well as the more permeable streaks.

Q And if you have those uneven areas of permeability or unequal areas of permeability down flank with the flank of the structure, that further aggravates the down-flank lease operator's position, doesn't it?

A If you assume those conditions, I think it would, probably, yes.

Q Well, you are not willing to say that there is uniform permeability, and you think that probably there are varying degrees of permeability throughout the reservoir, is that not correct?

A Yes, that is characteristic of limestone and dolomites.

Q Now, with a water drive, Mr. Christie, let's assume for the moment that we have dense zones running through the reservoir, such as we find at the top of the reservoir. Now, what would be the effect there in a water-drive reservoir?

A Well, I don't know just what kind of an answer you want there.

Q Well, let's tie it down to our immediate problem here. Let's assume 80-acre spacing, with one well to 80 acres. And let's

assume that between the 40 that the well is located on and the 40 that goes with that well tract in order to make up your 80-acre unit, let's assume that there happens to be a dense zone or area. Now, how will the oil from the off-side of this dense zone or area, be produced through the well in a water-drive reservoir?

A Well, it may not be produced in that one particular well. It will be produced in some other well of the field.

Q And probably some other lease or fee owner, too?

A Yes, just like you would get under any spacing.

Q Well, in the situation we have assumed, the dense zone lying somewhere in the middle part of the 80-acre tract, 40-acre spacing would get at least part of the oil, wouldn't it, that moved off and was drained through some other oil well?

A Not necessarily. If the well happened to drain half that area, it might get but very little.

Q It would get some, but it wouldn't get all, if you just relied upon one well to 80 acres?

A It would probably get its -- depending on the reservoir conditions, it would probably get its share of the reservoir oil.

Q Now, Mr. Christie, you do not contend, do you, that when you say one well will drain 80 acres, you don't contend that the drainage area will follow your lease lines, or your 80-acre tract lines, do you?

A No, sir.

Q What is the shape of the drainage area?

A Well, generally, it is a radial.

Q Circular in shape?

A Circular, yes, sir.

Q So it would be a circle that would contain at least 80 sur-

face acres under the --

A (Interrupting) Generally speaking.

Q On the assumption and the rules you are asking for here, is that right?

A Correct.

Q At least 80 acres?

A Yes.

Q Now, of course, locating your well in the center of a 40 and drawing a circle around it, that would contain 80 acres, why, you are going to take in some of your neighbor's land around, aren't you?

A Yes, sir.

Q You are going to drain some of your neighbor's oil?

A Just like any other well will drain some of your neighbor's oil, yes, sir. That is the primary reason for a -- for uniform spacing, is to allow everyone to get his share of the oil.

Q In other words, we will assume then, a series of over-lapping circles, of circulating over-lapping circles of drainage throughout the field?

A Yes.

Q If you get some of your neighbor's oil, and your neighbor gets some of yours, it all balances out, is that your assumption?

A Yes, sir.

MR. ADAIR: If the Commission please, we have here an ownership map of this particular area. It may or may not cover more land than the map we had here this morning. I've lost mine during the noon hour. But it has the wells located thereon and we tender it here to Mr. Christy, since it has not

been marked --

COMM. SHEPARD: (Interrupting) All right.

Q (By Mr. Adair) Mr. Christy, what is the last well Amerada completed in that reservoir?

A State B.T.D. No. 1.

Q Will you take a pencil, please, and draw around that well the area you think will be drained by this particular well?

A Roughly will be satisfactory?

Q Yes, sir, unless you --

A That's too large, isn't it?

Q Make any changes you wish.

A No, that is it, roughly.

Q That is roughly the area you think will be drained?

A We will assume, roughly, an 80-acre circle.

Q Well, this morning you said at least 80 acres and it might be -- might drain more?

A Yes.

Q Are you going to confine yourself at this time now to 80 acres?

A If all the wells in the field are spaced on 80 acres, it will be confined more or less to 80 acres.

Q Now, this morning -- do you mind if we put this up on the board? (Done). This morning, Mr. Veeder testified that the highest well in the field, I believe, was this well located here. (Indicating). Can you see, Mr. Veeder?

MR. VEEDER: Yes.

Q (By Mr. Adair) And that the next highest well in the field was, I believe, the T.P. well located here, Texas-Pacific well B. 1. That the next highest well in the field was Amerada's B.T.A. well, and that the lowest well in the field was Amerada's

B.T.D. well. So we see, do we not, that coming down this line here from Texas-Pacific B.J well, to Amerada's B.T.D. well, we are going down-structure, is that correct?

A Yes, sir.

Q And I believe you testified that the drainage of oil was up-structure in a water-drive reservoir such as you assume this to be.

A I didn't say drainage. The migration is up-structure.

Q Would you say that of the final drainage area of this down-structure unit, that more of the oil will come from down-structure than will come from up-structure?

A Depends in which direction your water-drive is coming from.

Q We here have assumed, have we not, a level water table?

A That is correct. Also assume that we have an aquafer out from the field somewhere supplying the water and that will be the direction of your water drive.

Q You have no information on that?

A No, we do not have, at least, I do not know which direction the water drive is from.

Q It could be coming from this direction (indicating) as well as from any other point on the compass, couldn't it?

A Well, as far as my knowledge is concerned, it could, yes, sir.

Q This direction -- I'm moving in towards the northeast. So in such a case, if your water drive is coming from this direction, and you cannot say it is not, -- most of the oil produced by the B.T.D. well is going to come from down-structure, isn't that sound engineering?

A Assuming that the water drive is from that direction, yes, sir.

Q So in that case, if you were called upon to define the drainage area of this B.T.D. well, you would move your circle south, that is, in a southwest direction, or drop it south. You drop it down-structure?

A Well, I am not concerned with what area this particular well would drain; I am concerned more with how much oil that well will get from the reservoir as a whole.

Q Unfortunately, Mr. Christy, you have to adjust the relative rights as I understand it, under the New Mexico law, based upon giving the land owner a fair share, to produce the recoverable oil under his land, is that correct?

A Well, that is a legal question apparently.

MR. KELLOUGH: Just a minute, please. He is arguing the law with the witness now, and he has got to know just exactly what it is. I don't think it is fair to this witness to argue the law with him, New Mexico law, on the point. That may be a matter which we can discuss at the time.

COMM. SHEPARD: You shouldn't ask any more legal questions of the witness, Mr. Adair. Confine yourself to engineering questions.

Q (By Mr. Adair) So actually, assuming the facts as we have heretofore stated them, your area of drainage drawn around this B.T.D. well, would show more oil coming from down-structure up to the well than would come from up-structure down to the well?

A Theoretically, yes, sir, if your water drive is from that direction.

Q In such case, then, Mr. Christie, the owner of these two leases would be afforded a better opportunity of recovering the oil under his tract if he drilled his wells up within 330 feet of the lease lines?

A Well, he would so far as the north edge of those leases are concerned; but on the other hand, if he drilled within 330 feet and crowded the field, he wouldn't be entitled to as much oil.

Q Well, now, isn't that last statement a conclusion? We'll let it end for whatever it is.

MR. ADAIR: I have no objection. That's all we have of this witness.

REDIRECT EXAMINATION

Q (By Mr. Kellough) Mr. Christie, adopting the assumed set of facts which Mr. Adair assumed, which is that there is a water drive going north by east, wouldn't the same drainage characteristics apply to the Texas-Pacific Coal Company well farther up the assumed dip?

A If they drilled a well, yes, sir.

Q Is it not true in any water-drive reservoir that there are locations which will be more productive than others in the field?

A Yes, sir.

Q Can you say as an engineer that in any oil field or, particularly in any water-drive field, that each and every lease will recover the same amount of oil as each and every other lease?

A We have no way of controlling the oil underneath the boundary line, though we have ways of controlling oil by the mechanics of the reservoir. It makes no difference whether the spacing is 10 acres, 20 acres, 40 or 80. We will continue to get the share of the oil in the reservoir and not underneath any particular lease, depending on the mechanics of the reservoir.

Q Would it seem to you, then, as an engineer, reasonable to

assume that a spacing program should not attempt to equalize recovery by surface acreage, but should, as much as possible, assure that each owner recovers the proportion of the amount of oil to which, structurally, he would be entitled to recover?

A That is correct. It would be a very involved matter to devise a formula in any type of reservoir whereby each lease owner would get exactly his share of the oil underneath his particular tract.

Q If any inequities in any material degree should be developed by future evidence, wouldn't it be your recommendation that the Commission be authorized to grant an exception and reduce the allowable, probably separately; and would that in your opinion be sufficient to assure the owners of recovering the oil to which they are justly entitled?

A Well, if they had some way of determining how much they are justly entitled to under reservoir mechanics, I think it would, yes, sir. They would have that right.

RECROSS EXAMINATION

Q (By Mr. Adair) In any event, Mr. Christie, the owner of a separate tract would be more likely to get the oil, to recover the oil under his tract with two wells than he would with one, wouldn't he?

A Well, he would get the same amount of oil, but it might be coming off of somebody else's tract; but eventually, he would get the same amount of oil from the pool.

Q Assuming continuous permeability?

A Yes, sir.

Q That is a factor in your answer, isn't it?

A Yes, sir.

MR. ANDERSON: May I ask Mr. Christie a question?

COMM. SHEPARD: Yes. Give your name.

MR. ANDERSON: Bob Anderson of Roswell, representing Malco Refineries of Roswell, New Mexico.

Mr. Christie, have you any estimate of recovery in the Devonian?

THE WITNESS: No, I haven't made those observations.

MR. ANDERSON: Well, do you think, in effect, the basic pattern can be determined before you have any idea of recovery per acre?

THE WITNESS: I don't see that recovery has any bearing on it.

MR. ANDERSON: Well, I should think it would.

THE WITNESS: Except from an economic standpoint.

MR. ANDERSON: Well, that, I should think, would be one of the Commission's principal concerns. In other words, the principal reason, I should think, for increasing the acreage pattern would be to make it economically feasible. In other words, if the wells are not commercially productive on 40-acre spacing, it would be necessary to increase the pattern so that it can become commercially productive. There might be a saving of the oil and of course, the Commission and everybody is interested in conservation. But there is a question, too, will the wells be profitable? I think the testimony is 190 feet of pay and with the water drive, that recovery from acreage is very, very, -- substantially much higher in most fields in New Mexico. The 40 acres would not, for instance, be necessarily profitable, or more profitable than if you had less cost of development per acre.

MR. KELLOUGH: If the Commission please, I'm sorry I'm not acquainted with the gentleman. He is testifying, and if

he has an interest in this area, if his company does --

COMM. SHEPARD (Interrupting) He's just asking a question.

MR. KELLOUGH: That is for information --

COMM. SHEPARD (Interrupting) Well, of course. Mr. Adair, do you have any more questions?

Q (By Mr. Adair) The answer is, you get the same amount of oil --

A If you get the same amount of oil, or substantially the same amount of oil, why spend from $225,000.00 to get it, which the public eventually is going to have to pay for.

COMM. SHEPARD: Any further questions?

MR.KELLOUGH: No.

MR. McCORMICK: Do you rest?

MR. KELLOUGH: Yes. If the Commission please, we rest, with the privilege of calling a rebuttal witness, if we may have it.

COMM. SHEPARD: All right. We will take about a five or ten minute recess.

(Whereupon, at 2:25 o'clock, P.M., a recess was taken, the hearing being re-convened at 2:35 o'clock, P.M.).

COMM. SHEPARD: The meeting will come to order.

At this time, I want to introduce Governor Mabry. (Applause).

GOV. MABRY: Thank you a lot.

MR. ADAIR: If the Commissioner please, our witnesses have not yet been sworn.

COMM. SHEPARD: Will you swear them, Mr. Graham? (Done). You may proceed, Mr. Adair.

MR. ADAIR: Thank you, sir.

G. R. CARTER

being first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Will you state your name to the Commission, please?

A G. R. Carter.

Q Where do you live, Mr. Carter?

A Midland, Texas.

Q By whom are you employed?

A Texas-Pacific Coal and Oil Company.

Q What capacity?

A Division Geologist.

COMM. SHEPARD: Speak louder, please.

Q (By Mr. Adair) Will you state briefly your training and experience as a geologist?

A I am a graduate from the University of Oklahoma, have a Bachelor's Science Degree in geology. I have worked as a geologist for 13 years, eleven and a half of those being for the Gulf Oil Corporation, and since 1947, for the T.P. Coal and Oil Company.

Q In your position as a geologist for Texas-Pacific Coal and Oil Company, are you familiar with the area known as the Bagley Area in Lea County, New Mexico?

A I am.

Q Does Texas-Pacific Coal and Oil Company own leases in that area?

A They do.

Q How many different or separate leases do they own in the Bagley area?

A They own three.

MR. ADAIR: At this time, Mr. Commissioner, I offer in evidence photostatic copies of three leases, mentioned by Mr. Carter, and the purpose for putting them in evidence will be apparent when I ask Mr. Carter this next question.

Q (By Mr. Adair) Mr. Carter, do you have a 40-acre tract in the Bagley Area that is covered by a single lease?

A Yes, we do.

Q And that lease in turn covers additional acreage not located within the Bagley Area?

A That's right.

MR. ADAIR: If the Commission please, I offer these in evidence.

MR. KELLOUGH: No objection.

COMM. SHEPARD: They will be admitted.

(Tex.-Pac. Exhibit No. "B" was received in evidence).

MR. McCORMICK: Which 40-acre tract is that?

MR. ADAIR: The SE¼SE¼ of Section 1, 12 South, 33 East.

Q (By Mr. Adair) Mr. Carter, I now ask that you turn around and face the board. I now refer you to the plat on the lands, the plat on the board, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "C", and ask you to explain, please, what that plat is.

A That is a lease ownership plat. The red indicates the leases held by the Amerada; the yellow, leases by the T.P. Coal and Oil Company; and the brown, leases on other companies.

Q I refer you next to the plat immediately to the right, which is marked, Texas-Pacific Coal and Oil Company's Exhibit "D", and ask you what that plat represents?

A That is a mineral fee ownership plat, the blue indicating the

state owned leases, the yellow or orange, the federal leases, and the green, individual leases.

Q All right. I refer you next to the plat that is located immediately to the right of the mineral ownership plat, and ask you what that plat represents? It is marked Texas-Pacific Coal and Oil Company's Exhibit "E".

A That is an interpretation on the geology on top of the Glorieta Sand in the Bagley Area.

Q Now, when you say that is an interpretation, you do not mean that you will -- that that is the way it actually exists under the ground, but in your opinion, that is a reasonable interpretation, is that right?

A That's right.

Q Based upon the wells that have now been drilled?

A That's right.

Q I refer you now to the plat located immediately below, and marked, Texas-Pacific Exhibit "F", and ask you what that represents?

A That is a contour map of the Bagley Area as interpreted on the top of the Pennsylvanian Formation.

Q There again, you do not mean that that is exactly as the conditions in the Pennsylvanian formation will be found underground, but that is a reasonable interpretation, in your opinion, based upon the wells that have now been drilled in the area?

A That's right.

Q I refer you to the plat remaining on the board, marked Texas-Pacific's Exhibit "G", and ask you what that plat represents?

A That is an interpretation of the geology in the Bagley Area as contoured on the top of the Devonian, I mean, to the base of

the black shale.

Q Which Amerada calls the top of the Devonian in testimony here in this hearing?

A Right.

Q Now, there again, Mr. Carter, I ask you whether or not you say that is exactly the way the contour of the Devonian formation will be after the field is drilled up?

A That is not. It is merely an interpretation from the data we now have.

Q In your opinion, it is a reasonable interpretation?

A Right.

Q Is there any portion of that contour there about which you can feel reasonably certain?

A I can feel reasonably certain in the immediate area between these wells, extending from T.P. State B, down through and including the Amerada No. 1 Caudle well.

Q Now, also referring you to the same map, Exhibit "G", what does that blue line which follows closely the red line around the contouring, indicate?

A That is our estimate of the water level.

Q Found in the Devonian?

A Yes.

Q That assums a level water table?

A Yes, sir, that's right.

Q And that also would mark -- according to that contouring interpretation -- that would mark the limits of production where you have it contoured?

A That's right.

Q In the Devonian?

A That's right.

MR. ADAIR: If the Commission please, we offer all these

plats in evidence.

COMM. SHEPARD: They will be accepted.

(Tex.-Pac. Exhibits Nos. "A", "B", "C", "D", "E", "F", and "G", received in evidence).

MR. McCORMICK: I would like to ask who made these interpretations, you?

THE WITNESS: The geologist in the Ft. Worth office and myself.

MR. McCORMICK: Under your supervision?

THE WITNESS: Yes.

MR. ADAIR: Any other questions, Mr. McCormick?

MR. McCORMICK: No.

MR. MORRELL: May I ask a question of this witness?

MR. ADAIR: Yes.

MR. McCORMICK: Wait until he is through, Mr. Morrell.

MR. ADAIR: I have no objection.

MR. McCORMICK: I think it is better order to wait until after you are through entirely.

Q (By Mr. Adair) How many wells has Texas-Pacific Coal and Oil Company completed in the Devonian reservoir in the Bagley Area?

A The Texac-Pacific Coal and Oil Company has completed one.

Q Will you give the geological data to the Commission on that one well?

A The well was completed November 23, 1949, total depth 10,914, with base of the black shale being encountered at 10,721 feet. Based on Schlumberger interpretation, we considered the top of pay encountered 10,770 feet. The well was drilled to 10,824

and a core taken from 10,824 to 874, an interval of 50 feet, of which 47 feet 2 inches were recovered. The well was then cored from 10,874 to 914, an interval of 40 feet, of which 39 feet were recovered. Drill stem tests in the bottom from 874 to 914 showed flowing production, and the well was acidized with 500 gallons of mud acid and 5,000 gallons of regular acid, completed with an initial potential of 2848 barrels, or at the rate of 202 barrels per hour.

Q Did you mention what the casing size was?

A This well was drilled to a total depth of 10,914, and casing was set at 10,765 feet. That was 7" casing.

Q So that if it is necessary to go back into the well, you have a large enough casing to do so?

A That's right.

Q And drill deeper or otherwise?

A Right.

Q Do you have a Schlumberger log of this well?

A I do.

MR. ADAIR: If the Commission please, we offer in evidence the Schlumberger log covering Texas-Pacific Coal and Oil Company State B 1 well, concerning which Mr. Carter has been testifying.

EXAM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "H" was received in evidence).

Q (By Mr. Adair) Do you have a core analysis? Did you have a core analysis made, Mr. Carter, of any part of that core recovery that you have?

A Yes, we cored from 824 to the total depth of 10,914, two cores on which I stated the recovery, and the upper 13 feet of

the core from 824 to 874 was analyzed; and all of the core from 10,874 to 914 was analyzed.

Q Is that the core graph?

A It is.

MR. ADAIR: If the Commission please, we offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibits Nos. "I", "J", "K", "L", were received in evidence).

MR. McCORMICK: Will you have him explain in lay terms just what that core graph shows?

THE WITNESS: The core graph was made by the Rotary Engineering Company of Midland, and it shows the porosity, the permeability on this side, the green being the oil saturation and the red the water saturation in the core.

Q (By Mr. Adair) Now, referring to that core graph, you have varying degrees of porosity and permeability, do you not?

A That's right.

Q Going all the way from dense which would mean impermeable?

A That's right.

Q Insofar as oil is concerned at least, to a permeability of some 170 millidarcies?

A That's right.

Q Now, permeability is generally measured in millidarcies, is that right?

A Right.

Q You have a porosity running all the way from within -- what ranges?

A Porosity ranges from as much as 7 -- no, that's in the upper portion. The upper core shows from 7 percent to approximately 1 percent.

Q Porosity 7 percent to 1 percent?

A The lower section shows from -- the minimum appears to be approximately 3 percent and the maximum 12 percent.

MR. McCORMICK: How does that compare with other pools?

THE WITNESS: Well, I am --

MR. McCORMICK: (Interrupting) I mean, is it good or bad or medium, or what, so far as porosity is concerned?

THE WITNESS: I would say it is approximately average in the type of reservoir that we have here.

MR. McCORMICK: Approximately what?

THE WITNESS: Approximately average for the type of reservoir that we have here. It might be a little higher than average.

MR. McCORMICK: That is the porosity?

THE WITNESS: Yes.

MR. McCORMICK: And the permeability, is that higher? Higher than the average?

THE WITNESS: Well, I am not in a position to give those -- I just don't know. Porosity is in portions.

Q (By Mr. Adair) You qualified your answer by saying it is higher than average in porosity in portions?

A Yes.

Q Now, why did you say that?

A Well, for instance, in dealing with Andrews production, you have got a different type of porosity than you have got in this well in this area.

Q Well, now, referring to this particular well, why would you say that in portions only it was higher than average, or was average? Do you or do you not have a dense zone in your coring in this well?

A We did, extending from 10,830 to 10,874.

Q And by dense you mean there was absolutely no oil or no porosity or permeability within that zone?

A That's right.

Q Do you have with you a copy -- I mean, a portion of the core that was taken out of that dense zone?

A We do.

Q Now, you actually had a portion of this dense section analyzed, did you not?

A Yes, we did, from 830 to 824.

Q What were the results of that analysis?

A It showed no permeability, and porosity of 1 percent or less, and water saturation up to 30 percent.

MR. ADAIR: If the Commission please, we offer this core in evidence.

COMM. SHEPARD. It will be accepted.

(Tex.-Pac. Exhibit No. "M" was received in evidence).

Q (By Mr. Adair) Now, in addition, do you have a piece of the core that was taken out of the bottom of the hole?

A That's right, production 10,913 feet.

Q And you said -- this is the core I have in my hand?

A That's right.

Q And you said this particular area was analyzed, did you not?

A Right.

Q What did that show with reference to porosity and permeability?

A Porosity approximately 6 percent and permeability of about 12 millidarcies.

Q Would you say that was more or less than average for this

type of reservoir?

A Well, based on this core graph, I would say it was loss.

Q In other words, based upon the core graph which you have in front of you, it would appear the formation was tightening up down where you bottomed your hole?

A That's right.

MR. ADAIR: We offer this in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "N" was received in evidence).

Q What are these black flakes or streaks in this core, Mr. Carter?

A That is black residual material with flakes of some shale in it.

Q Is that shale permeable?

A It is not.

Q In any event, based upon your coring of this Texas-Pacific B 1 Well, you have found that the reservoir is intercepted by a thick, dense zone and in those portions of the reservoir that are permeable, the permeability varies to a great degree, is that correct?

A That is right.

Q And based upon what you have found in this well, and based upon your comparison of the Schlumbergers of this well and Schlumberger survey of the Amerada B.T.A. No. 1 well, would you say that it is likely that Amerada drilled through a similar dense zone in that well?

A That is possible.

Q In other words, you found coring kicks which you thought you could possibly correlate, or could be correlated?

A That's right. Now, based on those kicks, I don't think they would have had quite as thick a zone, but I do think there was a dense zone in the upper part.

GOV. MABRY: We can't hear.

THE WITNESS: Based upon the interpretation of the Schlumberger, I do not think their zone was possibly as thick as we had in this well, but I do believe that there was a dense zone in the upper part of their reservoir.

Q Of their pay section?

A Right.

Q Now, it doesn't make any difference, does it, how thick this dense zone is, if it is present it is sufficient to stop the migration of oil or the flow of oil, is that correct?

A That is right, if it is present.

Q Mr. Carter, I will ask you what this exhibit is here, that has been marked Texas-Pacific Exhibit "O"?

A That is an overlay contoured on top of the Devonian, the copy of the map, the contour map that is shown as Exhibit "G".

MR. ADAIR: We offer that in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "O" was received in evidence).

Q (By Mr. Adair) I will ask you, Mr. Carter, to place that overlay over the lease ownership map that is marked as Texas-Pacific's Exhibit -- what is the exhibit number on that, Bob?

MR. SCHAEHLE: Exhibit "C".

Q (By Mr. Adair) -- Exhibit "C". Now, your overlay is -- your contouring on this overlay, as you said, is exactly the same as you have it here?

A That's right.

Q And you said when this was offered in evidence, that this is not what you guaranteed that would be found down in the Devonian reservoir, but was a reasonable interpretation of it, as a geologist, based upon the information you have from the wells now drilled in the reservoir, is that right?

A That is right.

Q And you further said that you did feel fairly definite and certain about that portion of the contour map which extends from Texas-Pacific B 1 well down to Amerada Caudle well?

A That's right.

Q That is because you have more controls in that area?

A That is correct.

Q Now, assuming such a situation, without saying that it is so, as is indicated upon this contour map, what do you find with reference to these leases located along this area that I am now drawing within the lines 67-50 contour?

A That would indicate to me that in that band of contours between 6700 and 6750, there would be a possibility of 50 feet of pay within that band in the Devonian reservoir.

Q Going down to what?

A Water.

Q To water?

A Yes.

Q And all leases lying outside this blue band, assuming the correctness of this interpretation, would be dry?

A That's right.

Q All right. Now, let's move this overlay and place it over the mineral fee ownership. (Done). Now, the same would hold true, of course, on that, that the leases outside the blue line or water line would be -- would probably be dry, and the

leases inside would have a chance to produce?

A That's right.

Q Now, applying this contour map to this area right here, what do you fine? First,before you answer that -- there are a lot of little circles on these maps. What do they mean?

A They represent the proposed pattern of the Amerada, for the proposed pattern of spacing.

Q All right. Now, placing this overlay on this map and tracing these contours that we have talked about, and assuming they are no more than an interpretation, but they are an interpretation, what do you find here in the N½NE¼ of Section 2?

A I find that well would be too low to produce in the Devonian.

Q While this tract here, which would be next to it, would produce in the Devonian?

A It could possibly produce. It would be higher than that structure if that interpretation is right. It could produce.

Q It could produce in the Devonian?

A Yes.

Q Now, coming down to this area down in here, what do you find with reference to this 80 acres, this 80-acre unit, which is the E½NW¼ of Section 11?

A I find that based on that interpretation, that the NE¼ of that quarter would have a chance of production in the Devonian, whereas on the center leases in the 40, the SE¼NW¼ would be out of the picture.

Q In other words, following the pattern proposed here at that particular 80-acre tract, you would get a dry hole, while you would have a chance to get an oil well by moving up here?

A That's right.

MR. VEEDER: May I ask a question?

MR. ADAIR: Surely.

MR. VEEDER: I would like to ask Mr. Carter what control he has for contours over here. (Indicating). You have a control here, whereas your control for your contours --

THE WITNESS (Interrupting) That was based on spacing of controus, keeping the same spacing that you would in an area where you definitely do have control.

MR. ADAIR: Mr. Veeder, it may save some time if you will wait until I finish with Mr. Carter, and then ask him any way you want to.

Q. (By Mr. Adair) You don't say, Mr. Carter, that this falls off this way for sure, do you?

A No, that is just my interpretation.

Q But you do say it falls off somewhere?

A Right.

Q And some way over here? (Indicating).

A Right.

Q And you do say that through here, you are fairly certain of your work?

A That's right.

Q Let's take the overlay off and place it upon the map on which Mr. Christie drew the circle there. (Done). Now, Mr. Carter, this circle was assumed by Mr. Christie in a rough manner, to represent the drainage area of the State BTD well No. 1. Now, looking at that circle through the overlay, and looking at the fixed- pattern location, which is right there in the S½ -- it is not on the map, so we will put it there. You find, do you not that by fixed-pattern spacing, you will get a dry hole down here, whereas actually you would get some oil up here?

GOV. MABRY: Better identify your location there.

MR. ADAIR: Yes.

THE WITNESS: SE¼NE¼, Section 11, based upon that interpretation, would not produce. It would be dry in the Devonian, whereas, the NE¼NW¼ of Section 11, based on this interpretation, would have a chance for production in the Devonian.

Q (By Mr. Adair) And B.T.D. well would drain some oil from underneath this tract to which you have referred, which will not be compensated for along the lines that Mr. Christie talked about, by draining on fixed-pattern spacing?

A I believe that's right, providing that is his interpretation of unitization. I think that's right.

Q All right, Mr. Carter. Will you come back around. Now, Mr. Carter, I refer you here to what has been marked as Texas-Pacific Exhibit "P", and ask you what that represents?

A That is a cross section from southwest to northeast, through the Amerada Caudle, the Amerada B.T.D., the Amerada State B.T.A., Texas-Pacific Coal and Oil Company, State B 1; and east to the Mid-Continent State No. 165, Pennsylvanian producer.

Q Now, that cross section is cut across the line that is shown in blue in Texas-Pacific Exhibit "O", -- that piece of acetate there?

A That is true.

Q The line runs from "A" to "A" prime, and on the piece of acetate is a red line of that cross section?

A That's right.

Q What do these colors across the top represent?

A Those colors indicate the ownership lease, ownership in the Bagley Area, the red being the Amerada acreage, the organge or the yellow, the Texas-Pacific, and the brown, the Mid-Continent.

Q The next colors across the exhibit, what does that mean?

A That is the fee ownership, or mineral ownership.

Q Explain that, please.

A The orange is the federal; the green, the individual; the blue, the state.

Q And the brown lines running down through the exhibit, what do they mean?

A They are property lines.

Q Separating the various leases and/or mineral fee ownership?

A That's right.

Q Now, will you explain what these various interpretations down this way mean?

A The base of the dark blue and the top of the light blue is the top of the Pennsylvanian formation, as interpreted by us, by the T.P. Coal and Oil Company. The blue is all Pennsylvanian down to this point, which is the top of the Mississippian lime. This next zone is the top of the black shale at the base of the Mississippian line; and this line is the base of the black shale, or, as I believe from the testimony this morning, is considered the top of the Devonian by the Amerada.

Q What have you considered the top of the Devonian in this interpretation of this c ross section?

A I have considered the base of the black shale.

Q No, I mean, what you considered the top of the Devonian?

A Well, I have considered it down within, below the base of the black shale, based on sample interpretation and electric log interpretation.

Q I simply point that out as there is some difference between you and Amerada's geologist in picking the top of the Devonian strata. The area delineated in red down at the base of our map

is the area which the Amerada has considered as the pay section through the well, is that right? You heard their testimony?

A I believe -- I wouldn't know whether that exact top is the top of their considered pay.

Q Will you go over to the Texas-Pacific B 1 well; and you find a box down around the bottom of it. Will you explain that box and explain the enlargement?

A This is an enlargement of cored section of the State B well, in other words, from a depth of 10,824 feet to a depth of 10,914 feet.

Q Just a minute. You don't mean to say all of this was cored? Your coring actually started somewhere in here?

A Yes, it was from a depth of subsea datum 8651 to a depth of minus 6755, is the way we considered the water level.

Q That is assuming a uniform level water table throughout the field?

A That's right.

Q What does this greyish colored area represent?

A Dense zone, which we cored from 10,830 to 10,874.

Q And which, from the interpretation of Schlumberger logs, you feel was found in Amerada's log to possibly some lesser extent?

A Possibly so.

Q In the B.T.A. No. 1 well?

A Yes. There is a kick that is indicative that it could be the same zone -- same dense zone as we found.

Q And I believe you testified, did you not, Mr. Carter, that from your information, your examination of the well sample, the sample log, as well as your examination of the core and core analysis, that there was no uniform permeability through-

out the pay section?

A Yes, that is based primarily on the cored section, plus the interpretation that was put on the electric log as seen opposite that core section.

MR. ADAIR. All right. We wish to offer this in evidence.

COMM. SHEPARD: It will be admitted.

(Tex.-Pac. Exhibit No. "P" was received in evidence).

MR. ADAIR: That is all.

CROSS EXAMINATION

Q (By Mr. Kellough) Mr. Carter, since you have the cross section on top, I want to ask you a question about that. With reference to this box arrangement here, if it perforated the whole section you could recover the oil from both of those areas indicated in red, could you not?

A You could recover it opposite those preforations in those red zones. There will be no object in recovery in the dense zone.

Q You are not contending that you need to drill an extra well in order to cover this by one well, and this by another well, are you?

A No, sir.

MR. McCORMICK: You are referring to Exhibit "P", for the record.

MR. KELLOUGH: For the record, I might state, the two zones I was referring to are shown in the box in red.

Q (By Mr. Kellough) Now, referring to Exhibit "E", this I believe you stated was a contour of the Glorieta Sand?

A As we interpret it, it is a contour of the Glorieta Sand.

Q That is not the Devonian?

A No, it is not.

Q And that is not a sand or formation that is involved in this hearing here, is that right?

A No, sir.

Q I also refer you to exhibit marked "F", that "F", I believe you stated was a contour of the Pennsylvanian formation?

A That's right.

Q And that is not the Devonian?

A No.

Q And that is not any formation referred to in this proceeding?

A That's right, so far as I know.

Q You also introduced in evidence a core analysis of T.P. well.

A That's right.

Q And I understood you to state that core analysis did not show a uniform porosity or permeability of the reservoir, is that correct?

A That is correct.

Q But did you also state that it did not show any continuity?

A I did not state that.

Q And I believe you testified that the core analysis showed a condition which is characteristic or average, I believe, was the word you used, of all Devonian Pools?

A To my knowledge.

Q To your knowledge, and in certain parts it was superior, I believe you testified?

A What?

Q And in certain sections it was superior?

A That's right.

Q Now, referring to Exhibit T. P. "O", which you interposed on Exhibit "B" and on the two exhibits showing the royalty and lease ownership over on the board. It is true, is it not, that in any oil field, regardless of the spacing pattern, that you will also have edge wells?

A I'm not --

Q (Interrupting) You will always reach the edge of pools at some time?

A I'm not a reservoir specialist. I'd rather not answer the question. I would rather that would be referred to an engineer.

Q Well, you have testified with reference to the drainage of this well, have you not?

MR. ADAIR: He testified with reference to the drainage area as delineated by Mr. Christie.

Q (By Mr. Kellough) Can you explain to the Commission how any spacing pattern will prevent a well from draining across a lease line?

A No, I can't.

Q It is not your position that a spacing pattern should be developed and based according to surface ownership, is it?

A Will you state your question over?

Q Are you taking the position that a spacing pattern should be developed according to lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness has taken any position with reference to that at all. If Mr. Kellough wishes to make him his own witness in that matter, it is perfectly all right. But I wish to call the attention of the Commission to the fact that he has not testified on that point at all.

GOV. MABRY: Well, he is probably entitled to ask him.

He is testing his conclusions as a geologist.

MR. ADAIR: All right, sir.

A You are asking if I am in a position to testify that those spacings should be placed on surface-acreage pattern, is that the way you worded it -- surface spacing?

Q In your testimony, I believe you endeavored to show, and prepared a number of exhibits to show that according to the spacing pattern which is being asked for at this hearing by the applicant, that it would result in the drilling of certain dry holes?

A That's right.

Q And also by the preparation of these exhibits and by the reference of counsel to the drainage area shown, you also, as I understand your testimony, infer or attempt to leave with the Commission the impression that a well will drain some oil from under somebody else's lease?

A In that instance, it would drain some oil from under somebody else's lease.

Q Now, then, will you explain to the Commission first, how you can avoid drilling dry holes by arranging the spacing?

A By structural position, if you have correct structural position. I'm not saying you won't drill dry holes, because all this is, is an interpretation up here. It was not exactly brought out, but using that as a basis, and if that be fairly correct, then wells drilled within -- outside of the blue line zone here, in all probability would be dry. They would be too low, assuming you have a level water table.

Q That's right. Now, that location you referred to of the proposed leases in the E/2 NW/4 of Section 11 --

A (Interrupting) That was the location south?

Q South of the water line.

A Yes.

Q And you testified that a well drilled in that location would, in your opinion, result in a dry hole?

A If my interpretation of the structure is right.

Q Now, you heard the testimony of witnesses for the applicant this morning?

A Yes, sir.

Q Now, in your opinion, is there anything in their testimony which would prevent, if those circumstances are true, the drilling of a well in the N½ of that particular unit?

A I'm not familiar -- I haven't looked at the map this morning, on the north-south line-up that you had, and what your exceptions were going to be on the east-west line there. You said there would be some specific exceptions there.

Q Did you hear the testimony that in event of -- for good cause shown, and an exception is subsequently desired, that it was our recommendation that such an exception be allowed by the Commission?

A I did.

Q And did you not hear the further testimony that in that event, it was our recommendation that the Commission, under the facts which then exist, determine to what extent the allowable should be reduced?

A That's right.

Q Now, is it your position that a unit, whether it be 40 acres or 80 acres, which contains non-productive acreage, should receive the full allowable?

A In that particular instance where you have got a 40-acre unit, the low water table as assumed, and with structural in-

formation to definitely confirm that, I would not think so. But that would be contingent upon information that would show that.

Q Then, it is your opinion that if a unit does contain non-productive acreage, it should receive a reduction in allowable, am I correct in that statement?

A Well, if you are -- as you have implied, we will assume the 80 acres for a well. I would think that the 40 acres -- all this is contingent upon the fact that the structural position would show that the other 40 acres was definitely out -- would be definitely dry.

Q Now, assuming that to be true, would it be your contention that a unit containing 40 acres of non-productive and 40 acres of productive, should receive a full allowable? Do you contend that should be done?

A In other words, you are asking me --

Q (Interrupting) I'm asking you if you should reduce the allowable because there is any non-productive acreage within a unit.

MR. ADAIR: An 80-acre unit?

Q (By Mr. Kellough) Either 40 or 80-acre unit.

A If there is any -- whether the allowable should be reduced?

Q That's what I'm asking you, assuming, you know, that it is non-productive?

A I wouldn't think so. I wouldn't think that it should be reduced.

Q You would think that an operator or a person is entitled to receive the same amount of oil?

A That's right.

Q From a unit which is in part non-productive and is a person

who has a well upon a unit all of which is productive, is that your testimony to this Commission, is that correct?

A That is correct.

Q All right. Now, then, if this field pool were developed on 40 acres, would there be any unit that would be partially non-productive?

A There probably would be. I would have to throw up that acetate and see. I would like specific instances.

Q Well, as a matter of fact, there would be, wouldn't there?

A Well, there probably would, but I don't know. I mean, I would rather have a specific instance there that you would like to ask me about -- my opinion.

Q I'm asking you whether, under the structure, your map which you have prepared, if that was developed on 40 acres, would there be any unit which would contain in part non-productive acreage?

A Based on that, this portion would right here (indicating), of that 40 acres.

GOV. MABRY: The witness said, "right here," pointing his finger at something.

THE WITNESS: It is the E½SE¼NW¼ of Section 1, 12 South, 33 East.

Q (By Mr. Kellough) In other words, were this developed on 40 acres, you would have some units which would contain non-productive acreage?

A That's right.

Q So that it would not correct the situation which you testified about to change the spacing pattern, is that right?

A I wouldn't think that; you would be reducing your amount of acreage that would be non-productive, whereas you would have a

chance to -- a change on State-wide rules of placing that on the 330 location, as the State-wide rules now apply.

Q Now, referring once more to Exhibit "O", as superimposed on Exhibit "B", it was the purpose of your testimony to convey the impression to the Commission that this well would drain, the B.T.D. well, from under leases owned by other parties than the owners of that well?

A That is based upon your engineer's testimony, as that being the drainage pattern.

Q Now, that would not be corrected by drilling one well to every 40 acres throughout the field, would it?

A In this particular instance, it would be corrected.

Q But you cannot correct or change the drainage in an oil field by the density of spacing?

A You cannot change the drainage, no, sir.

Q Is it or is it not your opinion that well spacing should be based upon lease ownership?

MR. ADAIR: If the Commission please, I don't believe the witness is qualified or has been qualified to answer that. He is not an engineer. He qualified as a geologist.

MR. McCORMICK: Are you qualified to answer that?

THE WITNESS: I'm not qualified as an engineer, no, sir. I think that would fall within the reservoir study.

MR. McCORMICK: Do you have anything you wish to state on this subject?

THE WITNESS: No, sir.

MR. McCORMICK: No opinion you wish to state on this subject?

THE WITNESS: None I wish to make.

MR. McCORMICK: Nothing you could back up, is that right?

THE WITNESS: That's right.

MR. KELLOUGH: I believe that's all. I have no further questions.

COMM. SHEPARD: We will take a five-minute recess.

(Whereupon, at 3:30 p.m., a recess was taken, the hearing being re-convened at 3:40 P.M.).

MR. SPURRIER: Are you ready?

MR. ADAIR: If the Commission please, I had one or two more questions of Mr. Carter.

REDIRECT EXAMINATION

Q (By Mr. Adair) Mr. Carter, I'm afraid you might have left the wrong impression in answer to Mr. Kellough's question awhile ago. Is there or not continuous permeability through the pay section of the Devonian reservoir in the Bagley?

A There is not, based on the dense zone we have found.

Q Second, do you as a geologist, see any reason why you should get away from the State-wide rules at this time in the development of this Bagley Devonian reservoir?

A I see no reason whatsoever.

MR. ADAIR: That's all.

MR. McCORMICK: Mr. Morrell, do you have a question you wanted to ask Mr. Carter?

MR. MORRELL: I wanted to ask Mr. Carter, why the bulge in the south end of the structure as you had interpreted it?

THE WITNESS: On the Devonian?

MR. MORRELL: On the Devonian.

THE WITNESS: You pull it down from the B.T.D., with a subsea datum amounting to minus 6615, to the Caudle amounting to minus 6749. The spacing is coming off from here (indicating) to here, and increases down this way, which necessitates pull-

ing the contours down to make this point.

MR. MORRELL: Is that the -- that is a mechanical interpretation? It doesn't necessarily follow the geological evidence?

THE WITNESS: Well, Mr. Morrell, I don't know whether I understand you or not.

MR. MORRELL: Did you generally find the structure with a bulge on one end of your closure to the high as the limit?

THE WITNESS: That's right.

MR. MORRELL: Normally, as you go down-structure, that same elipse would be reflected?

THE WITNESS: I think this is the most conservative manner of contouring.

MR. MORRELL: Well, I would agree on that. It is ultra conservative.

THE WITNESS: That was my statement.

MR. McCORMICK: Any other questions?

MR. KELLOUGH: No further questions of this witness.

MR. SPURRIER: Mr. Carter, just for information, of course, how did you determine this water contact?

THE WITNESS: That was based on the B.T.A. well, which, after they ran pipe, 11,200 approximately -- that I'm not positive of -- about these figures. They tested from 11,010 to 11,020, and these are rough figures. You have the figures somewhere in the testimony -- they got 4,000 feet of oil plus 6,000 -- excuse me, I mean 600 feet of water. Then they plugged back to 10,980, perforated and got all oil from, I believe it was from 956 to 80, is that right?

MR. VEEDER: No, perforation from 950 to 965 they tested there.

THE WITNESS: Anyway, the interpretation was based on tests where they got the water.

MR. SPURRIER: Then, did I understand you to say that your cores, or the core, I guess I should say ə-

THE WITNESS: (Interrupting) There were two cores.

MR. SPURRIER: You stopped taking the bottom core at what you considered to be the water-oil contact?

THE WITNESS: No, I didn't.

MR. SPURRIER: That was strictly a misunderstanding, then.

THE WITNESS: Yes.

Q (By Mr. Adair) Is it true that on the map here, no matter how high your hole at the bottom, above to where you assume the water-oil contact to be is represented by that dash, the red section there in the box?

A Yes, that's right.

Q And from minus 6671 to minus 6675 would be 4 feet?

A Yes, it would be four feet.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other questions of this witness? Your next witness, Mr. Adair.

R. G. SCHAEHLE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Adair) Mr. Schaehle, you have testified and qualified before the Commission, before, have you not?

A Yes. That is R. G. Schaehle.

Q Mr. Schaehle, I hand you here what is marked as Texas-Pacific Exhibit No. "Q". We'll put it up on the board. (Done). I will ask you to explain to the Commission please, what that

represents?

A That is a generalized or schematic section, cross section through a water-drive reservoir.

Q Based upon what assumptions, Mr. Schaehle?

A There are several assumptions to make. First, let me say this does not apply by scale to any specific area, or it does not follow this cross section. There are certain assumptions here. One, the uniform porosity and permeability throughout, which we wouldn't have here, but uniform porosity and permeability is assumed. That assumption is like taking a set of marbles, all uniform, all the same size, and you would have a number of toys exactly alike. Further, it was assumed that the oil-water level, or oil-water contact is level. On this thing then we show 5 wells through there, through property lines. In addition to that we have put an idealized faulting on one flank. That is this line here, showing an off-set. Then, you see a heavy blue line at this point. Let us say first, under initial conditions, everything above this line marked, "Water line," was oil bearing in this typicalized section; that after the period of production, the water has moved vertically in this particular section, assuming the wells are produced correctly, and after some ex-period of production, it has reached this point.

Q By "this point" you mean --

A (Interrupting) Indicated by this line, and this is the water line after period of production, and this hatching here shows that recoverable oil has been withdrawn and been replaced with water.

This section shows certain features, shows flank on moderate or edge wells exemplified here and intermediate wells, and

a crestal well.

Let me call your attention to the property line which comes down through here. This edge well is washed out. It is done, when the water level gets to here.

Q There again is the same point that is marked there on the map as what?

A As water line after period of production.

Q Now, assuming that you took this edge well, Mr. Schaehle, and assuming that it is located in the center of the 40 as proposed by these rules --

A (Interrupting) That's right.

Q Will you assume that you have moved that well up within the 330 feet of your property line and will you demonstrate and explain to the Commission what happened?

A There the well, located in the center of a 40 of a fixed pattern, it could be there, down-structure, on an 80, after it is exhausted there and done, it leaves this much oil bearing formation, this much oil, that will never be recovered by this well.

Q That is the oil that was under that particular piece of property?

A That's right. If it is ever rec overed it is going to migrate across property lines, as has been testified. However, if this is moved under -- let's say 330 feet, or applying State-wide standard rules at the present time, this well will be in this vicinity when it is drawn up. That well would continue to produce until this water level has gone to this point.

Q To the point which you have marked there with your pencil?

A That's right; and they would recover in addition, this much more oil that was under this property.

Q All right, Mr. Schaehle. Now, we can see down below that the oil-bearing portion of the Bagley Area, the Bagley reservoir, as indicated in Texas-Pacific Exhibit "P" -- now does that same situation that you have been talking about, moving the well up-structure to within 330 feet of the property line, would that apply anywhere on Texas-Pacific Exhibit "P"?

A Yes, it would apply several places. This, I assume is the location being drilled, and since they are all on circles, a well is located mid-ways. This is the property line, from here to there. At this point (indicating), you would probably get additional oil to what this well can produce.

Q And that would apply anywhere --

A (Interrupting) In here, the same in here.

Q A nywhere down-structure side of the reservoir?

A Anywhere you got off the crest of the structure.

Q All right, sir. Is there anything you wish to show or explain to us with reference to this generalized cross section?

A I haven't mentioned this fault. I believe the testimony earlier in the day was probably something like this. There is an idealized fault, a text-book thing. This well drilled down on the side exhausted this volume of oil, and it was washed out, and all the rest of the time, this amount of oil, from here to there has been gone.

Q You say, "from here to there," you are talking about the oil from the east, on the map?

A From the up-throw side of the fault right here. This oil that is under this piece of property has been produced by a well somewhere up-structure.

Q In other words, the property owner will -- we are assuming that well is located in the center of a forty, and assum-

ing that by moving 330 feet of the property line you can get on the up-side of the fault?

A That is correct.

Q That property owner under these circumstances here is losing a tremendous quantity of oil that will never be produced through his well?

A That is correct.

Q I will ask you this, Mr. Schaehle. Is there any reason as an engineer that you know of, why the Bagley Devonian reservoir should be at this time developed on any other basis, other than under the present State-wide rule?

A I do not.

Q Do you think -- in your opinion, do you believe that one well to 80 acres as proposed here will effectively drain all recoverable oil under the 80 acre tract, or under 80 acres of oil if you want to put it on that basis, in attempting to get away from correlative rights and move -- say you got Jim Doe's oil, some of his oil, and he got some of yours. In any event, one well, regardless of how it is located, will not, in your opinion, regain effectively all recoverable oil under 80 acres?

A No, it won't. It will not.

Q You base that opinion upon both the geological and engineering date that has been available to you and which you have heard here today?

A I do.

MR. ADAIR: I believe we have no further questions at this time. I would like to offer this exhibit in evidence.

COMM. SHEPARD: It will be received.

(Tex.-Pac. Exhibit No. "Q" received in evidence).

MR. McCORMICK: Any questions that anybody else has of Mr. Schaehle?

MR. ADAIR: If the Commission please, I would like at this time to make sure I have introduced all exhibits -- that all exhibits I have introduced are offered in evidence.

MR. McCORMICK: All of the T.P. Exhibits, from "A" to "Q" have been admitted in evidence.

MR. ADAIR: Thank you.

MR. McCORMICK: Mr. Adair, Mr. Spurrier wants to ask you some questions.

MR. ADAIR: Yes, sir.

MR. SPURRIER: Does the record show that you just showed that 80-acre spacing would limit correlative rights?

MR. ADAIR: No, I didn't intend to leave that impression. The impression I got from the Amerada questions and answers was that they were disregarding property lines in fixing their drainage pattern and drainage area, and I questioned whether or not that was proper.

MR. SPURRIER: Thank you.

MR. McCORMICK: Any other witnesses, Mr. Adair?

MR. ADAIR: No further witnesses.

MR. KELLOUGH: I would like a five minute recess, and I believe we would like to put on a rebuttal witness.

COMM. SHEPARD: Very well. We will have a five-minute recess at this time.

(Whereupon, at 4:00 o'clock, P.M., a recess was taken, the hearing being re-convened at 4:05 o'clock, P.M.).

COMM. SHEPARD: The hearing will come to order.

REBUTTAL

C. V. MILLIKAN

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

Q (By Mr. Kellough) Will you please state your name and occupation to the Commission?

A My name is Millikan -- initials C. V.

MR. SPURRIER: Mr. Millikan has qualified many times for the Board. It is not necessary to qualify him.

MR. KELLOUGH: All right.

Q (By Mr. Kellough) Mr. Millikan, in your opinion on this Bagley Reservoir, will one well adequately and efficiently drain an area of at least 80 acres?

A I believe it will.

Q Would you care to make any statement to the Commission in explanation of your conclusion?

A I think we have several points that indicate that it is a good water-drive reservoir. I don't believe there has been any controversy of the testimony that it is a rather -- that it is permeable, I would say more-than-average permeable reservoir. As a general rule, we find that low gas-oil ratios are present where we do have a good water drive, that in itself not being conclusive, however; but as a general rule that condition does exist.

We have a pressure there that is about equal to hydrostatic head and about normal for that depth of reservoir. We have found a good quantity of water to the side and below the oil reservoir itself. The indications, I believe, are fairly good that we have a large aquafer, although we don't have sufficient control to demonstrate it definitely. We have, also, some other pools established in that same stratographic position that is the top of the Devonian in this general area, and on two of those, I think we have evidence of a good water drive. One of those is Cross-

roads. I am not familiar too much with the detail of that, but it is my understanding there has been no declining pressure in the app.oximate year and a half that those wells have been in. I believe two of them are producing some water and the dry holes that have been drilled around them have shown evidence of an ample quantity of water. That also has a low gas-oil ratio, but not as low as is present in these Bagley wells.

This field on which we have more history is just across the state line in Texas, in which there are eight wells in the field, which has been developed on 80-acre spacing, and that pressure under an allowed of 240 barrels a day on the 31 a day allowed, did have a little decline in pressure;earlier this year when the production was reduced we had an increase in pressure, during the first eight months of this year. I think, combining all of that gives very good evidence that it is quite reasonable to expect a good water drive in the Bagley.

Q Mr. Millikan, do you have any comment which you wish to make to the Commission with reference to the testimony regarding the dense areas which appeared in the core analysis introduced by the Texas-Pacific Coal Company?

A Well, those dense areas are, I think, as they stated, not anything unusual in these Devonian reservoirs, or for that matter in lime reservoirs, or for that matter, in any reservoirs. We have areas or intervals or stratums of varying permeability, and very often the strata is of greater or lesser thickness that might not even show any presence of oil, which I believe in our examination of samples heve rather consistently shown oil and I think the permeabilities have been, perhaps, too low to get any appreciable amount of oil. I think probably some of

the testimony might be a little misleading regarding continuous or discontinuous, or uniform porosity and permeability. I think, it seems to me, in summing it up that there was not a clear distinction between vertical permeability and horizontal permeability.

Now, it is quite true, as was testified, I believe, by Mr. Schaehle, or Mr. Carter, or perhaps both, that where we run into these dense areas, that we probably do not have vertical permeability through those. In other words, this water that exists apparently entirely under this structure -- the water movement is not directly vertical. I don't believe the point was made clear, but I think that we do have lateral permeability through this reservoir. In the first place, that is a common thing to expect in reservoirs. We have that in all reservoirs, and I think the concrete evidence of that is the fact that we do have an accumulation of oil above water, with such evidence as we have being that it is a a relatively flat or level water table. And if we didn't have a continuous permeability through there, then how did the oil all get up there just in this, as someone referred to this morning, equivalent of a bowl turned upside down. And if we are going to have a water drive, which I think all have indicated probably exists -- and if you are going to have a water drive, you have got to have that continuity of permeability throughout the reservoir.

Q I have one further question, Mr. Millikan. Do you have any comments which you care to make as to whether the 80-acre spacing pattern, which has been proposed by Amerada, will result in a disruption of the correlative rights of the parties in the pool, which could be remedied by any other spacing program?

A I do not see that 80-acre spacing, or 160-acre spacing, or

40-acre spacing or 10-acre spacing, changes that picture at all. Certainly we have -- in any oil pool, we reach the edge of the pool, and we find certain parts, whatever the spacing unit may be, that probably lie beyond the limits of oil production, or beyond the limits of economic oil production. There may be some oil there, but it is not economic to drill. Then, that is, for all practical purposes, it becomes the limit of the pool. And there were no land lines there when that oil pool was formed. They have been put there subsequently, and they, as a general rule, are curve lines, as has been indicated in the testimony here; and regardless of the spacing, I think that those same conditions will exist. And the fact that we cannot recover all of the oil by 80-acre spacing, I don't see that it introduces any problems that wouldn't exist under any other spacing unit.

Q Then, in your opinion, the spacing pattern which we have presented here will not prevent any of the owners in that reservoir from obtaining their fair and equitable share of the oil in the reservoir?

A I think that under the recommendations that we have made here as to spacing and allocation, they will provide each operator, each land owner, each royalty owner, the opportunity to obtain his fair and equitable share of the oil from the reservoir.

MR. KELLOUGH: That's all.

CROSS EXAMINATION

Q (By Mr. Adair) Mr. Millikan, do you know what the virgin bottom-hole pressure in this reservoir was?

A About -- I believe according to Mr. Christie, it was 4261.

Q For your information, and Mr. Schaehle can verify this, the bottom-hole pressure in our well was 4390.

A What depth?

MR. SCHAEHLE: We may be able to correct that. It is -- 24 feet from total depth of State B 1, is 10,890.

THE WITNESS: Well, that would show a little higher pressure than ours, reduced to the same datum.

Q (By Mr. Adair) Well, reduced to the same datum, what would 4390 be in the B.T.A. well?

A 44 -- about 4407.

Q 4407, and Mr. Christie testified that after 4 months' production, the bottom-hole survey was run, and what was the bottom-hole pressure?

A 4247.

Q Will you subtract those and give us the drop of the pressure -- the drop of the bottom-hole pressure in 4 months' production from your B.T.A. No. 1 well?

A Now, you want the difference in pressure?

Q The drop in pressure.

A You want the difference?

Q Assuming you converted our 4390 to whatever it was for your B.T.A. well, did you not?

A I'm assuming your pressure is correct.

Q And assuming our pressure is correct.

A That would be a decline of 260 pounds.

Q In four months' production?

A And assuming your pressure is correct.

Q Is such a decline alarming?

A Not to me, because I don't believe it exists that much. Our own pressure, taking the same pressure element, gets a variation of difference in pressure in the well there on the order of a quarter and a half of a percent.

Q You don't mean to say, at the same subsea datum point in the

reservoir that the pressure would be different, would you?

A I'm maintaining they will be the same.

Q Then what you don't have any confidenc e in is our bottom-hole pressure, is that correct?

A Well, I don't think I would go that far. Maybe our pressures are wrong. But at least, they were taken with the same instrument and relatively they ought to be about correct.

Q Well, assuming such a drop, would that not indicate that the water drive is not as effective as you have --

MR. KEELOUGH (Interrupting) Well, he is asking the witness to assume a set of facts which the witness has said does not exist, or rather, which the witness did not admit.

MR. McCORMICK: That is improper --

GOV. MABRY (Interrupting) We can't hear counsel. We can hear the witness clearly, but not counsel.

MR. ADAIR: Sorry, Governor. I asked Mr. Millikan to correlate the bottom-hole pressure found in our well to be 4390 pounds, into the pressure he would expect to find in his well at his depth, and he got a pressure of 4407 pounds, I believe. Mr. Christie testified that after four months' production, they took a bottom-hole pressure in the B.T.A. well, which is the well we are talking about; and he found it to be 4200 and what?

THE WITNESS: 47 pounds -- 4247 pounds.

MR. ADAIR: 4247 pounds, a decline in pressure, not based upon assumption, but based upon actual pressures found at the subsea datum of the B.T.A. Well, resulting in a decline of pressure of how much? How many pounds, Mr. Millikan?

THE WITNESS: Well, the difference in pressure is 260 pounds.

MR. ADAIR: A decline in pressure of 260 pounds after four months' production.

THE WITNESS: But that is not the decline in pressure, in my opinion, because the decline which we found between our original pressure and the pressure after four months production, was only a difference of 14 pounds, taken at the same level and with the same instrument, which is as close as you can read pressures at a pressure -- that is, as close as the instrument can be read.

Q (By Mr. Adair) Now, my next question, to go on, Mr. Millikan, either you or anyone who knows, Mr. Kellough, can answer. To save time, I don't want to have to read the application of Amerada here. Will one of you tell me whether or not your application for this hearing made any request for definite 80-acre units such as you have asked for today, based upon the east and west 80s of a 160-acre tract?

MR. KELLOUGH: The application speaks for itself and the testimony is all in.

MR. ADAIR: I was trying to save time. I guess I'll have to read it.

GOV. MABRY: Somebody can tell us that. Your testimony is in. What did you show?

MR. McCORMICK: The application speaks for itself.

GOV. MABRY: True enough. and we'll get into that if you don't know.

MR. ADAIR: That's perfectly all right.

MR. KELLOUGH: The application asked for 80-acre proration units, and we did not, in the application, recite the description of the particular units, but we did describe the location of the wells which we were asking, or requesting the

hearing on.

MR. ADAIR: That answers my question perfectly. Thank you.

Q (By Mr. Adair) Now, Mr. Millikan, will you refer to the T.P. Exhibit on the far left over there, No. "C"? If you will refer to the T.P. lease shown here in yellow, which is shown on this map as being T.P. Lease, NO. 211, being the E½NW¼ and the NW¼NE¼ of Section 2, 12 South, 33 East, you will see from that Exhibit that that is all one lease, will you not?

A That is the way you show it on the map.

Q Well, assuming that to be true, Mr. Millikan, based upon your application as originally filed, is there any reason why T.P. cannot form its 80-acre unit out of these two quarter sections of 240-acre tracts, which would be the NE¼NW¼ and the NW¼NE¼ of said Section 2?

A Is there any reason why that can't be done?

Q Yes.

A I don't know of any.

Q Still, here you come in today with your Exhibit "C", Amerada Exhibit "C", or your map, and request that -- first let me say the testimony shows, if the Commission please, a well now being drilled by T.P. at this point, which is now 4,000 feet deep, or more; and your application here -- and what I'm getting at is that you have stated in your testimony that you thought this was fair from the standpoint of correlative rights to the operators. You have requested that the T.P. take in Amerada, which owns this lease, the NE¼NE¼ -- as a partner, and form an 80-acre unit, taking the 40 acres off of the 120 acres which we had there, together, and form with Amerada an 80-acre unit as shown by our dotted lines here on Amerada Exhibit No. 1.

A That was our recommendation. We did not say it was a request. That was our recommendation only.

MR. ADAIR: The notice of this hearing, if the Commission please, if I may so state, which did not, in my opinion, encompass a pooling or a unitization hearing; and the result of the adoption -- the result of such a proceeding by Amerada here, if adopted, would be the first step for such a request for unitization. We have conformed, if the Commission please, in drilling of this well, to the proposed pattern. At the time we started the well, we had no idea at all that they would ask for east 80s and west 80s of quarter sections. We have 80 acres up there.

MR. McCORMICK: Mr. Adair, the application asks only for 80-acre spacing, and this tendered Exhibit here, No. 1, I believe, merely suggested a pattern; and the Commission, if it should adopt 80-acre spacing, could adopt that pattern, or any other pattern it wanted to work out.

MR. ADAIR: I'm just pointing out the Amerada proposal that they proposed for the pattern to be formed as shown on the Exhibit, which would require unitization.

MR. McCORMICK: That's right.

Q (By Mr. Adair) Mr. Millikan, if I may direct your attention here to the Texas-Pacific Exhibit No. "O" --

A (Interrupting) As superimposed on Exhibit "B"?

Q Yes, sir. Referring here again to Texas-Pacific well C.S. 1, which is now drilling, and Amerada's 40-acre tract immediately to the east, would you say that, assuming this contour map to be correct, would you say there was as much oil under the Amerada 40-acre tract as there is under the Texas-Pacific 40-acre tract?

A I don't know. If you want to make some point of that, why, I'll take either side of it.

Q I am not referring to taking some point of it, Mr. Millikan; I may ask you a question. Assuming the contour lines are correct, would you say or wouldn't you say there was less oil under the Amerada tract than there would be under the T.P. tract?

A Well, I think the point you make, Mr. Adair, that you --

Q (Interrupting) Well, can you answer the question, Mr. Millikan?

A No, I can't answer directly; but I would say there is a possibility there may be less.

Q Thank you.

MR. ADAIR: That's all.

A (Continuing) Is that all that you wanted? But there, that same thing might apply to any other set of contours that may be assumed or eventually proven in regard to that lease or any other lease in the field, the same as it exists in any other field in New Mexico, or in any other part of the country.

Q That's right. Well, while we are talking of fields in other parts of the country, other than the B. T. A. or the Hightower area, other than the Crossroads area and other than the Jones Ranch Field that you mentioned in Texas, do you know of any other Devonian field in New Mexico or Texas that has been developed on 80 acres fixed-pattern spacing?

A No, I don't have knowledge -- I don't know of any others, but I think probably there are others that would be just as well off had they been developed on 80-acre spacing. The mere fact that they have been developed on 40-acre spacing is not prima facie evidence that they may not have been developed with

equal equity on 80-acre spacing; nor does it also prove that they might not have done better had they drilled on 10-acre spacing.

MR. ADAIR: Thank you, sir. That's all.

MR. KELLOUGH: That's all.

MR. McCORMICK: Any other rebuttal witnesses?

MR. KELLOUGH: No.

MR. McCORMICK: Does counsel wish to make a summation?

MR. ADAIR: Texas-Pacific does, yes, sir.

MR. KELLOUGH: Yes, I think so.

MR. McCORMICK: Do you want a slight recess to prepare?

GOV. MABRY: Take a four or five-minute recess if you want to.

(Whereupon, at 4:30 o'clock, P.M., a recess was taken, the hearing being adjourned following statements by counsel).

I HEREBY CERTIFY, That the foregoing transcript of proceedings before the Oil Conservation Commission of New Mexico in Santa Fe, New Mexico, on December 20, 1949, is the true record of such proceedings to the best of my knowledge, skill, and ability.

Dated at Albuquerque, New Mexico, this 27th day of December, A. D. 1949.

Reporter.

N ICE 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, of the following public hearings to be held September 8, 1949 beginning at 10:00 o'clock A. M., on that day in the City of Santa Fe, New Mexico, in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

Beginning at a point 660 feet west of the southeast corner of NE/4 NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico.

Case 192

In the matter of the application of Gulf Oil Corporation for an order authorizing dual completion and production from the Yeso formation (Drinkard Pool) and from the Ellenburger formation (Brunson pool) from a single well bore in the Eunice King No. 17 Well, located 660 feet from the north line and 2310 feet from the west line (NE/4 NW/4) of Section 28, Township 21 South, Range 37 East, N.M.P.M., in Lea County, New Mexico.

Case 193

In the matter of the application of Shell Oil Company for a special exception from the provisions of Order No. 72 relating to central tank batteries with respect to State oil and gas leases E-1830, B-9446, B-7849 and E-2476 under conditions existing in the West Wilson pool, Lea County, New Mexico.

Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office to amend Section 3-A of Commission Order #764 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

"When remedial work on a well has been completed by an operator to

correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. SPURRIER, SECRETARY

LEA COUNTY OPERATORS COMMITTEE
HOBBS, NEW MEXICO
AUGUST 23, 1949

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, of the following public hearing to be held December 20, 1949 beginning at 10:00 o'clock A. M. on that day in the City of Santa Fe, New Mexico, in the House of Representatives.

STATE OF NEW MEXICO TO:

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

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico. This is a readvertisement.

Case 207

In the matter of application of Stanley L. Jones, Inc., a New Mexico Corporation, for an order approving an unorthodox location for Stanley L. Jones, Inc., State No. 13, 338 feet south of the north line and 73 feet west of the east line NE/4 NE/4 NE/4 of Section 23, Township 18 South, Range 27 East, N.M.P.M. in the Artesia pool, Eddy County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on December 5, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

S/ R. R. SPURRIER
R. R. SPURRIER, SECRETARY

SEAL

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, of the following public hearings to be held September 8, 1949 beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

Beginning at a point 660 feet west of the southeast corner of NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

Case 191

In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico.

Case 192

In the matter of the application of Gulf Oil Corporation for an order authorizing dual completion and production from the Yeso formation (Drinkard pool) and from the Ellenburger formation (Brunson pool) from a single well bore in the Eunice King No. 17 well, located 660 feet from the north line and 2310 feet from the west line (NE/4 NW/4) of Section 28, Township 21 South, Range 37 East, N.M.P.M., in Lea County, New Mexico.

Case 193

In the matter of the application of Shell Oil Company for a special exception

Case 193 (Continued)

from the provisions of Order No. 72 relating to central tank batteries with respect to State oil and gas leases E-1830, B-9446, B-7849 and E-276 under conditions existing in the West Wilson pool, Lea County, New Mexico.

Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office, to amend Section 3-A of Commission Order #784 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

> "When remedial work on a well has been completed by an operator to correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

R. R. SPURRIER, SECRETARY

SEAL

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

PROCEEDINGS

The following matter came on for consideration before a hearing of the Oil Conservation Commission of the State of New Mexico, pursuant to legal notice, at Santa Fe, New Mexico, on September 8, 1949, at 10:00 A. M.

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, of the following public hearings to be held September 8, 1949, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico in the Senate Chambers.

STATE OF NEW MEXICO TO:

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

Case 190

In the matter of the application of Twin Oil Corporation for an order unitizing the NE/4NE/4 of Section 4, Township 22 South, Range 37 East, N.M.P.M. or in the alternative, authorizing the drilling of a well or wells upon the following described lands:

> Beginning at a point 660 feet west of the southeast corner of NE/4NE/4 of section 4, Township 22 South, Range 37 East, N.M.P.M., thence on a direct line north 420 feet, thence on a direct line west, 210 feet, thence on a direct line south 420 feet, thence on a direct line east 210 feet, containing approximately 2 acres of land more or less, and fixing an allowable therefor.

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In the matter of application of Amerada Petroleum Corporation for the establishment of proration units and uniform spacing of wells for the common source of supply discovered in Amerada-State BTA No. 1 Well in NW/4 SE/4 Section 2, Township 12 South, Range 33 East, N.M.P.M., in Lea County, New Mexico.

Case 192

In the matter of the application of Gulf Oil Corporation for an order authorizing dual completion and production from the Yeso formation (Drinkard pool) and from the Ellenburger formation (Brunson pool) from a single well bore in the Eunice King No. 17 well, located 660 feet from the north line and 2310 feet from the west line (NE/4 NW/4) of section 23, Township 21 South, Range 37 East, N.M.P.M., in Lea County, New Mexico.

Case 193

In the matter of the application of Shell Oil Company for a special exception from the provisions of Order No. 72 relating to central tank batteries with respect to State oil and gas leases E-1830, B-9446, B7849 and E-276 under conditions existing in the West Wilson pool, Lea County, New Mexico.

Case 194

In the matter of the application of the Oil Conservation Commission upon its own motion at the suggestion of the proration office, to amend Section 3-A of Commission Order #784 also known as the Gas-Oil Ratio Order of September 10, 1948, by adding the following:

> "When remedial work on a well has been completed by an operator to correct for high gas-oil ratio in a pool having a limiting gas-oil ratio the adjusted allowable shall become effective on the date the new test is completed as indicated by Commission Form C-116."

or such other wording in the premises as may be determined from testimony adduced in open hearing.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico, on August 19, 1949.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

By /s/ R. R. Spurrier
R. R. SPURRIER, Secretary

SEAL

BEFORE:

Hon. Guy Shepard, Chairman
Hon. R. R. Spurrier, Secretary

REGISTER:

M. B. Penn
Tulsa, Oklahoma
For Mid-Continent Petroleum Corporation

E. J. Pierce
Midland, Texas
For Mid-Continent Petroleum Corporation

J. P. Hammond
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Booth Kellough
Tulsa, Oklahoma
For Amerada Petroleum Corporation

Roy O. Yarbrough
Hobbs, New Mexico
For the New Mexico Oil Conservation Commission

G. L. Shoemaker
Midland, Texas
For Stanolind Oil Purchasing Company

Frank R. Lovering
Hobbs, New Mexico
For Shell Oil Company

Paxton Howard
Midland, Texas
For Shell Oil Company

E. T. Adair
Fort Worth, Texas
For Texas Pacific Coal & Oil Company

R. G. Schuehle
Midland, Texas
For Texas Pacific Coal & Oil Company

Carl Barnhart
Midland, Texas
For Amerada Petroleum Corporation

R. S. Christie
Fort Worth, Texas
For Amerada Petroleum Corporation

J. W. House
Midland, Texas
For Humble Oil Company

Herman Pressler
Houston, Texas
For Humble Oil Company

Lloyd L. Gray
Tulsa, Oklahoma
For Gulf Oil Corporation

E. J. Gallagher
Hobbs, New Mexico
For Gulf Oil Corporation

C. D. Borland
Hobbs, New Mexico
For Gulf Oil Corporation

R. E. Canfield
Roswell, New Mexico
For the U. S. Geological Survey

Foster Morrell
Roswell, New Mexico
For the U. S. Geological Survey

Paul S. Johnston
Lubbock, Texas
For the Texas Tech. College

R. S. Blymn
Hobbs, New Mexico
For the Oil Conservation Commission

E. L. Shafer
Hobbs, New Mexico
For Continental Oil Company

I. H. Hinchfeld
Hobbs, New Mexico
For Lea County Operators

Elvis A. Utz
Santa Fe, New Mexico
For the Oil Conservation Commission

E. E. Kinney
Artesia, New Mexico
For New Mexico Bureau of Mines

E. C. Anderson
Socorro, New Mexico
For New Mexico Bureau of Mines

Dan McCormick
Carlsbad, New Mexico
For the Oil Conservation Commission

MR. SHEPARD: The meeting will please come to order. Mr. Graham, will you please read the first case.

(Mr. Graham read the notice of publication in Case No. 190.)

MR. KELLOUGH: May it please the Commission, I am attorney for Amerada. I don't know whether anybody is here to represent the Twin Oil Corporation or not. This application is an application to unitize a lease covering two acres owned

by a cemetery tract in a 40-acre tract in which Amerada owns the lease on the other thirty-eight acres. The agreement has been entered into between the Twin Oil Corporation and the Cemetery Association and Amerada. We are, however, still negotiating with some of our lessors, to ask their joining in this agreement. If there is no objection, we would like to ask this matter be continued for sixty or ninety days so that we may complete the settlement. The case as between the Twin Oil Corporation and the Cemetery Association has been settled, and we would like the matter just continued over until we can finally get it wound up.

MR. SHEARD: Is there anyone representing the Twin Oil Company or the Cemetery Association here? Does anyone have any objection to this being carried over? If not, it will be carried over until the next hearing. Would you want ninety days?

MR. KELLOUGH: That would be agreeable--thirty, or sixty or ninety.

MR. SHEARD: We will allow ninety days.

MR. KELLOUGH: That will be all right. We feel certain we will have it worked out in a few weeks.

MR. SHEARD: Read the next case, please.

(Mr. Graham reads the notice of publication in Case No. 191.)

MR. KELLOUGH: If the Commission please, I would like to make a statement for the record in connection with this matter. We came here yesterday prepared to present our evidence in this case with the understanding that all the operators were in agreement to our application. However, yesterday afternoon we were advised by the Texas Pacific Coal Company that they desired a continuance of this matter.

We have some properties which will be jointly owned in the 80-acre units if they are granted, and also the Texas Pacific Coal Company is now drilling a well located in the southeast of the northeast of Section 2, Township 12 South, Range 33 East, and they have requested that this matter be continued over until they complete their well. At the present time, it will be set down as soon as possible after the completion of their well. Their request is based upon the fact that additional information will be obtained from this well which is now drilling, and further that it will give us an opportunity to work out some arrangements with respect to these jointly owned leases. On behalf of Amerada, we have agreed to such a continuance with the understanding with Mr. Adair, the attorney for the Texas Pacific Company, that they will not seek any further continuance of this matter when it is set down as soon as possible after the well is completed and also with the understanding that any wells drilled in the meantime will not be located off of the pattern which Amerada has proposed in our application. Now, Mr. Adair, is that a correct statement?

MR. ADAIR: The well drilled by our company--I think possibly some other companies are involved--but any drilled by our company will conform to the proposed pattern.

MR. KELLOUGH: And you will not seek any further continuance after the matter is set down after the completion of this well?

MR. ADAIR: That is true.

MR. KELLOUGH: There are other operators interested in the area, and I wish to state to the Commission at this time

that it is possible that we now have sufficient evidence for 80-acre units in this field, and that we are not agreeing to the continuance with any hesitancy on our part that we do not have sufficient evidence, but because of the request of the Texas Pacific Coal Company, if there are any other operators here in the area, why then, of course, personally, I think I would welcome any statement they have to make as to their attitude on the continuance in this matter.

MR. SHEPARD: How long a continuance do you want?

MR. KELLOUGH: I don't believe a definite time can be specified. Mr. Adair advises me he believes their well can be completed in approximately ninety days. Rather than set it down--it may be completed sooner. I don't know how they are getting along with the drilling. I believe they are down around seven or eight thousand feet, but we would be most anxious to advise the Commission immediately upon the completion of the well to have the matter set down as soon as possible, because we are urging it very strongly, and we don't want to be delayed any more than we possibly can.

MR. SHEPARD: Any objections? If not, it will be continued indefinitely until you ask for it. Case 192.

(Mr. Graham reads notice of publication in Case 192.)

MR. GRAY: We would like to ask for a continuance in that case also. At the present time, we have a well completed as an Ellenburger Well. There is some indication it may be making a little bit of water. We would like to observe it a longer period of time before we put on testimony since we may want to withdraw the application.

MR. SHEPARD: Can we set that down for the first of November?

MR. GRAY: Yes, I think that will be all right.

MR. SHEPARD: If there is no objection, it will be continued until the first of November hearing. Case No. 193.

(Mr. Graham reads the notice of publication in Case No. 193.)

MR. HOWARD: Paxton Howard and Frank Lovering for the Shell Oil Company. We ask that Mr. Lovering be sworn.

(Witness sworn.)

FRANK R. LOVERING, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. HOWARD:

Q. State your name, please.

A. Frank R. Lovering.

Q. You live at Hobbs, New Mexico?

A. Yes, sir.

Q. And are employed by the Shell Oil Company, Inc.?

A. That's right.

Q. In what capacity?

A. Superintendent.

Q. In your capacity as superintendent you have jurisdiction of and are familiar with the field designated as the West Wilson Field, Lea County, New Mexico?

A. I do.

Q. You are familiar with the contents of the application filed for this hearing?

A. I am.

Q. I will hand you--will you identify--and please mark this [illegible]ibit A--please identify this.

A. This is a plan showing--Exhibit A is a plat showing the development to date in the West Wilson pool.

Q. It was prepared under your supervision?

A. That's right.

MR. HOWARD: I ask that it be admitted, please.

MR. SHEPARD: It will be admitted.

Q. Now, Mr. Lovering, will you point out to the Commission the Shell leases that are involved in this application.

A. In this particular application the leases involved are stated in the application, State Nos. E-1830, B-7849, B-9446, E-276. For purposes of well nomenclature we have designated them as our Shell State Leases A, B, C, and D.

Q. Those leases are all owned by Shell Oil Company, Inc.?

A. That's right.

Q. They are all state leases?

A. That's right.

Q. Now, will you state to the Commission the history of the development in the West Wilson pool, please.

A. We are confronted here with a very unusual problem, as noted on this plat, the territory involved here is surrounded by four dry holes by the Vickers Petroleum up on the northwest corner of the plat, Davidson and Clower in the western portion, Cities Service well which was recently completed as a dry hole up in Section 16, and J. W. Brown with a similar well in Section 22. Further than that the J. C. Clower well No. 2 and the Shell State A-2 in the southeast quarter of Section 16 are very weak wells and determine the eastern limits of the field. So that at the present time the center of the possible development there centers around four or five leases there, and it is indicated that production will probably be limited to about one well per lease. There is no room to the north. The

eastern limits are already defined, and it looks like about a six-well field.

Q. Mr. Lovering, what was the discovery well?

A. It was the J. C. Clower No. 1.

Q. When was the discovery?

A. About a year ago.

Q. In what formation?

A. The formation is reef-type bump, drilled at a depth of about 3960 immediately below the Yates formation.

Q. And it is your belief from the present indications that each of the leases involved in this application will probably be limited to one well, is that correct?

A. That is correct. The only exception to that would be to while there may be a possible extension southward, but the indications of the well drilled on State B-1 is that the pay is pinching out, and the development southward is only problematical. The pay is only about eleven to fourteen feet in thickness which overlies a water strata, and production is rather limited. All wells were brought in under the pump rather than open flow.

Q. In the present application you ask to be relieved from the necessity of having a separate tank battery on each lease and ask permission to use a central tank battery for all State leases?

A. That's right.

Q. At the present time, what type of battery facilities do you have in contemplation?

A. At the present time, we have two high 500-barrel tanks and one separator. We are at the present time installing heating and treating facilities which will include a 750-

gun barrel and a jug-type water heater. We anticipate if our petition is accepted that we will add another 500-barrel tank to the battery, one additional separator which will permit us to test any of the possible five wells that may be turned into that battery. We will be able to test them at any time at the pleasure of the Commission or any other authority.

Q. The tank battery is on Shell A as shown in the plat?

A. Directly between wells 1 and 2.

Q. And what is the estimated cost of the installation of this tank battery?

A. Between sixteen and eighteen thousand dollars. It has been generally--we like to carry at least four and a half tank production in our batteries. And it has been, and it generally runs between five and six dollars a barrel exclusive of heating, treating, and settling facilities.

Q. Now, to construct separate tank batteries on each of the leases, do you have an estimate as to what the cost would be as to each lease?

A. With heating and treating facilities it would run around $12,000.00, to state a rough estimate.

Q.. Yes, sir, that's right.

A. The engineers gave us a figure here, I believe.

Q. Well, it is stated in the application, and in your opinion that cost as regards each of these separate leases would be for the sole purpose of taking care of what at this time appears to be just one well?

Q. By asking the central tank battery, there can be saved the cost of these separate installations and in

addition to that the central tank battery can be equipped so that separate tests can be taken on all of these wells?

A. That's right.

Q. In your opinion will the granting of this application in any manner aid in conservation and prevention of the waste of natural resources?

A. It will.

Q. In what manner?

A. In reduced further maintenance cost and operational cost. It will reduce operational cost in the neighborhood of 60 per cent. It will cut down maintenance cost tremendously, just the difference between one tank battery and four or five.

Q. And that matter will prolong the economic life of the various leases?

A. It will make it possible to continue producing those wells for a longer period of time due to the reduced operating and maintenance cost.

Q. All the royalty is the same, owned by the State?

A. That is correct.

Q. Do you have anything else to add?

A. No, I would be glad to answer any questions.

MR. HOWARD: Does the Commission have any questions?

MR. McCORMICK: How about overriding royalties or oil payments?

A. None that I know of.

MR. McCORMICK: None on the other leases?

A. We were informed the royalties were all the same.

MR. HOWARD: That is our information that the royalties were all the same.

MR. GRAHAM: Does your information disclose the institutional ownership of all the four leases? Is it the same institution? Do they all belong to the schools?

MR. HOWARD: Yes, sir.

MR. McCORMICK: Do you have the leases with you, Mr. Howard?

MR. HOWARD: No, sir, I do not.

MR. McCORMICK: What system will you have for actually measuring the oil produced from each separate lease?

A. The facilities will be there to make periodic tests of at least two wells at a time, weekly, monthly, which we normally do anyway, and it would be no different than any other battery with the same facilities.

MR. McCORMICK: How do you know exactly how much oil each well produces each month during a proration period?

A. We never know exactly any more than we know on any two wells in the State of New Mexico. That is our general practice; it is based on period production. We can make those at the rule of the Commission, or at any specific interval, or at any time you wish for that matter.

MR. McCORMICK: This testing device you will have to test the production, it can be run for any period?

A. Any predetermined period, that is right.

MR. HOWARD: Whatever tests the Commission requires, we are ready to make. We do have a peculiar problem, and it looks like it will be a very small field. They are all leases with a common royalty.

MR. SHEPARD: Any objections? Does anyone have anything to say? If not, then it will be granted.

MR. HOWARD: Thank you.

MR. SHEPARD: Case 194.

(Mr. Graham reads the notice of publication in Case No. 194.)

MR. SHEPARD: Mr. Staley, do you have anything to offer on this?

MR. STALEY: Under the present Commission the changing of allowable between the first of one proration period until the beginning of the next proration period on any new allowable--I mean new wells--are given an allowable. That is, during the opening and closing of any proration period; from time to time the operators have done remedial work and been able to correct for high gas-oil ratio on wells in fields having limited ratios, but it has been necessary to wait until the beginning of the next proration period before assigning an allowable to that well; that is, a new allowable based on the new gas-oil ratio tested after the remedial work is completed. Therefore, the Commission was requested to make a ruling regarding the placing of high gas-oil ratios--that is, giving a new allowable to a well that is penalized under the present system.

MR. SHEPARD: Mr. Morrell, do you have anything to say on this?

MR. MORRELL: I see no objection to it.

MR. SHEPARD: Any other objections? Anyone have anything to say? If not, it will be granted. There being no further business, we will stand adjourned.

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I HEREBY CERTIFY That the foregoing transcript of proceedings before the Oil Conservation Commission is a true record of the matters therein set forth.

DONE at Santa Fe, New Mexico, this 20th day of September, 1949.

E. E. GREESON
Notary Public

My Commission Expires 8-4-52.