1998

CASE 1998: (REHEARING AUGUST 13, 1959)
Application of PHILLIPS for an order
establishing temporary special rules
for the RANGER LAKE-PENN POOL.

Case No.

1668

Application, Transcript,
Small Exhibits, Etc.

FIELD RULES HEARING

RANGER LAKE (PENNSYLVANIAN) FIELD

AUGUST 17, 1960

The information contained in this report has been assembled by Phillips Petroleum Company. The interpretation of these data and recommendations represents the views of Phillips Petroleum Company, and are not necessarily concurred in by the other operators in the field.

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

1.	**PHYSICAL PROPERTIES OF THE RESERVOIR ROCK**	
	a. Approximate Average Porosity	6.7%
	b. Maximum Measured Permeability	28 md.
	c. Average Connate Water	25%
2.	**STRUCTURAL FEATURES OF THE RESERVOIR**	
	a. Structure Map)	See Geological Exhibits
	b. Cross Sections)	
	c. Original Gas-Oil Contact	Not Applicable
	d. Original Water-Oil Contact	-6210 ft. subsea
3.	**CHARACTERISTICS OF RESERVOIR FLUID**	
	a. Average Gravity of S.T. Oil	40.4° API
	b. Estimated Saturation Pressure	2250 psia
	c. Formation Volume Factor	
	At Original Pressure	1.409
	At Saturation Pressure	1.430
	d. Solubility	
	At Original Pressure	754 cf/b
	At Saturation Pressure	754 cf/b
4.	**PRESSURE AND TEMPERATURE**	
	a. Original Reservoir Pressure	3620 psi
	b. Reservoir Temperature	162°F
	c. Reservoir Pressure History	See Attachment
	d. Average Shut-In Time Prior to Pressure Survey	48 hours
	e. Productivity Indices Data	
	Range - Bbl/Day/psi Pressure Drop	.793 to 1.553
5.	**STATISTICAL DATA**	
	a. Accumulated Production to 6-1-60	
	Oil	1,238,365 bbls.
	Gas	1,175,405 MCF
	Water	13,690 bbls.
	b. Monthly Oil Production)	See Attachment
	c. Monthly Producing Gas Oil Ratio)	
	d. Number of Producing Wells	20
	e. Spacing Pattern	Staggered 80-Acre Units
	f. State of Depletion	Development

6. **GENERAL RESERVOIR MECHANICS**

Originally this was an undersaturated crude which produced by fluid expansion above the saturation pressure. Indications are the reservoir will be depleted under a solution gas drive mechanism. There is no evidence of a water drive.

PRODUCTION DATA

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

YEAR AND MONTH		NUMBER OF WELLS	OIL PRODUCTION - BBLS. MONTHLY	OIL PRODUCTION - BBLS. ACCUMULATED	GAS PRODUCTION - MCF MONTHLY	GAS PRODUCTION - MCF ACCUMULATED	GAS OIL RATIO
1956	October	1	5,669	5,669	6,217	6,217	1,097
	November	1	5,360	11,029	5,628	11,845	1,050
	December	1	5,812	16,841	6,087	17,932	1,047
	Yearly Total		16,841		17,932		
1957	January	1	5,299	22,140	5,562	23,494	1,050
	February	1	6,369	28,509	5,070	28,564	796
	March	1	6,069	34,578	4,831	33,396	796
	April	1	5,988	40,566	4,766	38,161	796
	May	2	6,773	47,339	5,545	43,706	819
	June	2	10,736	58,075	8,847	52,553	824
	July	2	11,276	69,351	9,292	61,845	824
	August	2	10,674	80,025	8,795	70,640	824
	September	3	15,780	95,805	12,949	83,589	821
	October	3	16,296	112,101	14,279	97,868	876
	November	3	15,075	127,176	13,211	111,079	876
	December	4	22,211	149,387	14,665	125,744	660
	Yearly Total		132,546		107,812		
1958	January	4	21,648	171,035	14,294	140,038	660
	February	4	19,665	190,700	12,984	153,022	660
	March	4	20,665	211,365	15,209	168,231	736
	April	4	18,809	230,174	13,843	182,074	736
	May	4	19,344	249,518	14,237	196,311	736
	June	4	18,689	268,207	13,755	210,066	736
	July	4	19,170	287,377	14,108	224,174	736
	August	4	20,512	307,889	16,173	240,347	788
	September	4	20,130	328,019	14,816	255,163	736
	October	4	19,965	347,984	14,695	269,858	736
	November	5	20,727	368,711	17,493	287,351	844
	December	5	24,836	393,547	16,780	304,131	676
	Yearly Total		244,160		178,387		
1959	January	5	24,860	418,407	16,724	320,855	673
	February	5	22,680	441,087	15,199	336,054	670
	March	5	24,306	465,393	16,904	352,958	695
	April	6	26,883	492,276	17,529	370,487	652

YEAR AND MONTH	NUMBER OF WELLS	OIL PRODUCTION - BBLS. MONTHLY	OIL PRODUCTION - BBLS. ACCUMULATED	GAS PRODUCTION - MCF MONTHLY	GAS PRODUCTION - MCF ACCUMULATED	GAS OIL RATIO
1959 - Cont'd						
May	7	29,408	521,684	19,520	390,007	664
June	8	36,245	557,929	29,612	419,619	817
July	9	28,696	586,625	30,713	450,332	1,070
August	11	45,011	631,636	35,337	485,669	785
September	11	51,675	683,311	42,887	528,556	830
October	14	68,892	752,203	54,645	583,201	793
November	16	69,828	822,031	79,326	662,527	1,136
December	18	71,025	893,056	82,044	744,571	1,155
Yearly Total		499,509		440,440		
1960 January	19	84,670	977,726	92,369	836,940	1,091
February	19	66,386	1,044,112	77,416	914,356	1,166
March	20	65,506	1,109,618	81,167	995,523	1,239
April	20	61,458	1,171,076	88,118	1,083,641	1,434
May	20	67,289	1,238,365	91,764	1,175,405	1,364

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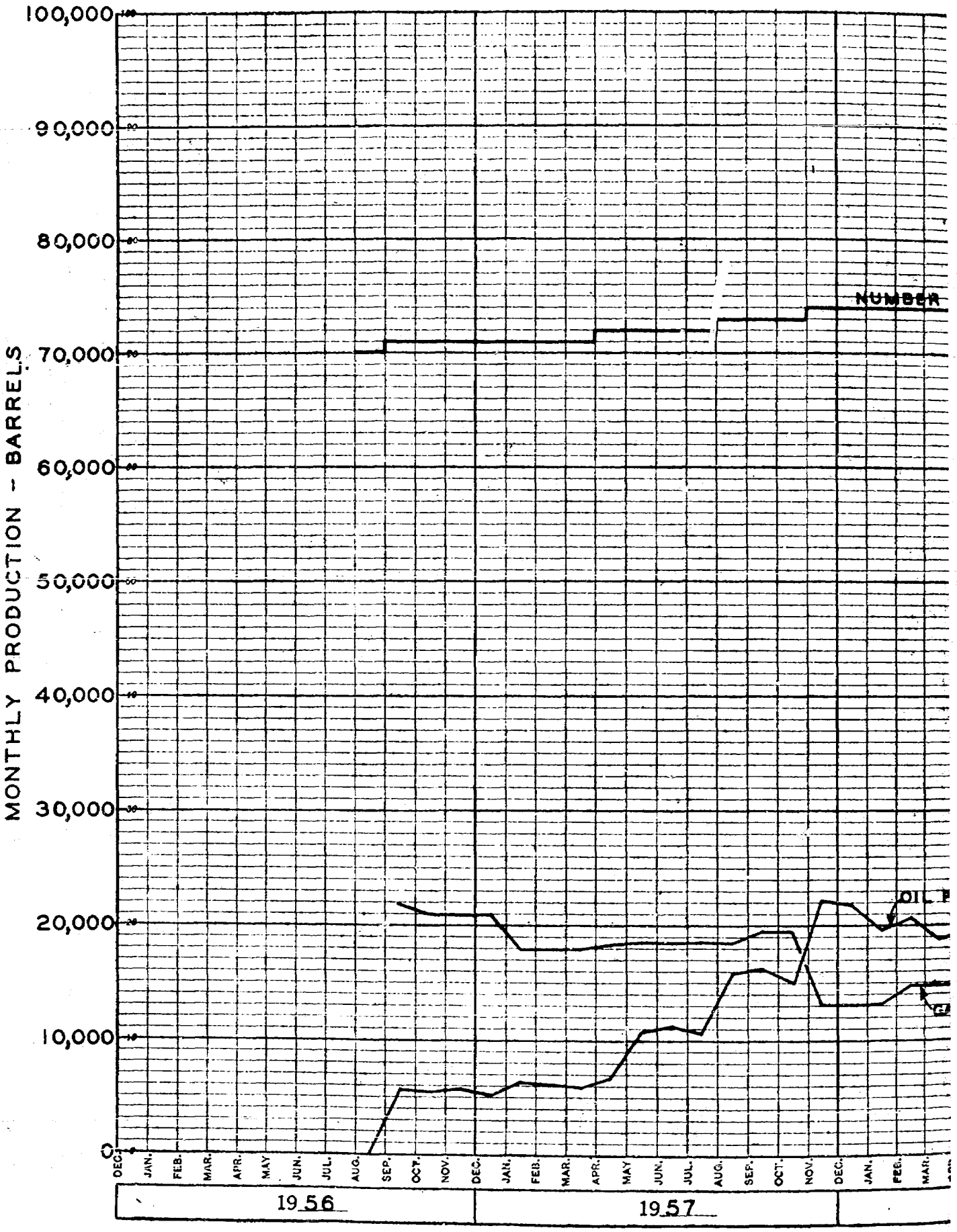
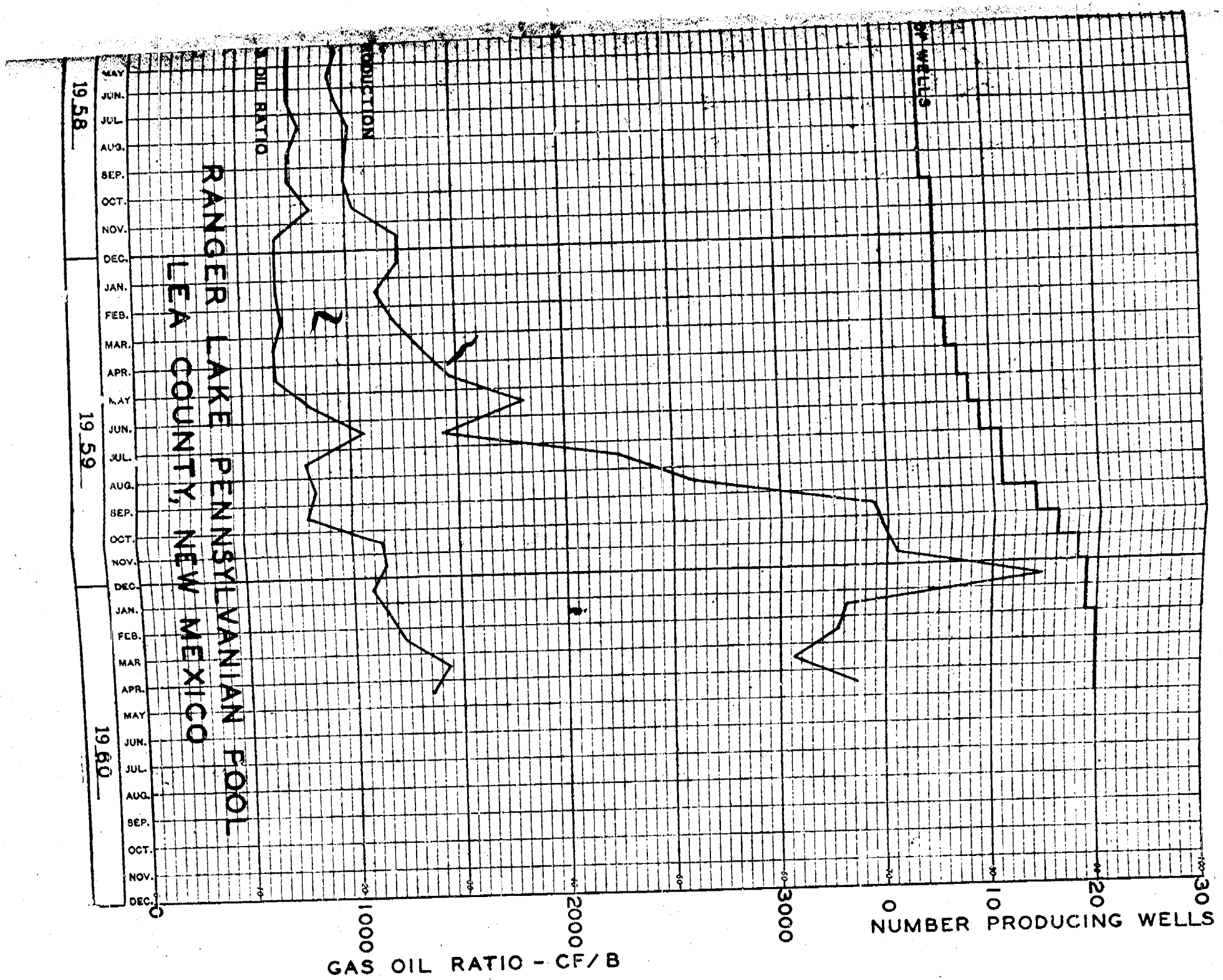
NO. 41120. FIVE YEARS BY MONTHS X 100 DIVISIONS.




RANGER LAKE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO
GAS OIL RATIO
PRODUCTION
No. wells
1958
1959
1960
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
0
1000
2000
3000
0
10
20
30
GAS OIL RATIO - CF/B
NUMBER PRODUCING WELLS

RANGER LAKE PENNSYLVANIAN FIELD
BOTTOM HOLE PRESSURE DATA
DATUM -6050

Phillips Ranger No. 1

Date	Hrs SI	BHP
11-15-56	48	3530
7-24-57	48	2800
12-26-57	48	2569
11-21-58	48	2311
12-29-58	24	2144
3-29-59	49	2009
10-12-59	48	1326
11- 2-59	50	1231
3-24-60	48	995
8- 8-60	48	927

Phillips Ranger No. 2

Date	Hrs SI	BHP
7-10-57	48	2843
11-18-58	48	2305
12-19-58	72	2212
3-29-59	53	2025
11- 2-59	51	1163
3-24-60	48	975
8- 8-60	48	961*

Phillips Ranger No. 3

Date	Hrs SI	BHP
9-13-57	48	3597
11-28-58	48	2551
1- 5-59	24	2440
3-29-59		2360
11- 2-59	53	1989
8- 8-60	48	1539

Phillips Ranger No. 4

Date	Hrs SI	BHP
12-26-57	48	2838
11-18-58	48	2004
1- 6-59	48	1882
3-29-59	49	1795
11- 9-59	49	1544
8- 8-60	48	1418*

Phillips Ranger No. 5

Date	Hrs SI	BHP
6-25-59		2568
11- 2-59	52	2031
8- 8-60	48	1836*

Phillips Ranger No. 6

Date	Hrs SI	BHP
4-25-59	48	2591
11- 9-59	48	1859
8- 8-60	48	1341

Phillips Ranger No. 7

Date	Hrs SI	BHP
8-25-59		2188
11- 9-59	50	1613
8- 8-60	48	1313*

Phillips Ranger No. 9

Date	Hrs SI	BHP
8- 8-60	48	1209*

Phillips Ranger No. 10

Date	Hrs SI	BHP
10-12-59		1789
11-18-59	48	1385

Phillips Ranger No. 11

Date	Hrs SI	BHP
11-25-59	48	2453

Phillips Ranger No. 12

Date	Hrs SI	BHP
3-29-60		2517
8- 8-60		2342

Amerada State WR "A" No. 1

Date	Hrs SI	BHP
12- 5-59	27	2810
12- 7-59	74	2816
2- 3-60	49	2630
5-18-60	48	2507
8- 8-60	48	2458

Pan American State AZ No. 1

Date	Hrs SI	BHP
11- 9-59	48	2903

Pan American State AZ No. 2

Date	Hrs SI	BHP
12- ?-59	24	2795

Pan American State AZ No. 3

Date	Hrs SI	BHP
12- ?-59	48	2860

Tidewater (Getty) State K No. 1

Date	Hrs SI	BHP
7-31-59	72	2896
11- 2-59	48	1443

Tidewater (Getty) State K No. 2

Date	Hrs SI	BHP
10-21-59	72	2849

Gordon M. Cone State No. 2

Date	Hrs SI	BHP
11- 2-59	72	1188

*Sonolog Pressures

NO. 41120. FIVE YEARS BY MONTHS X 100 DIVISIONS.

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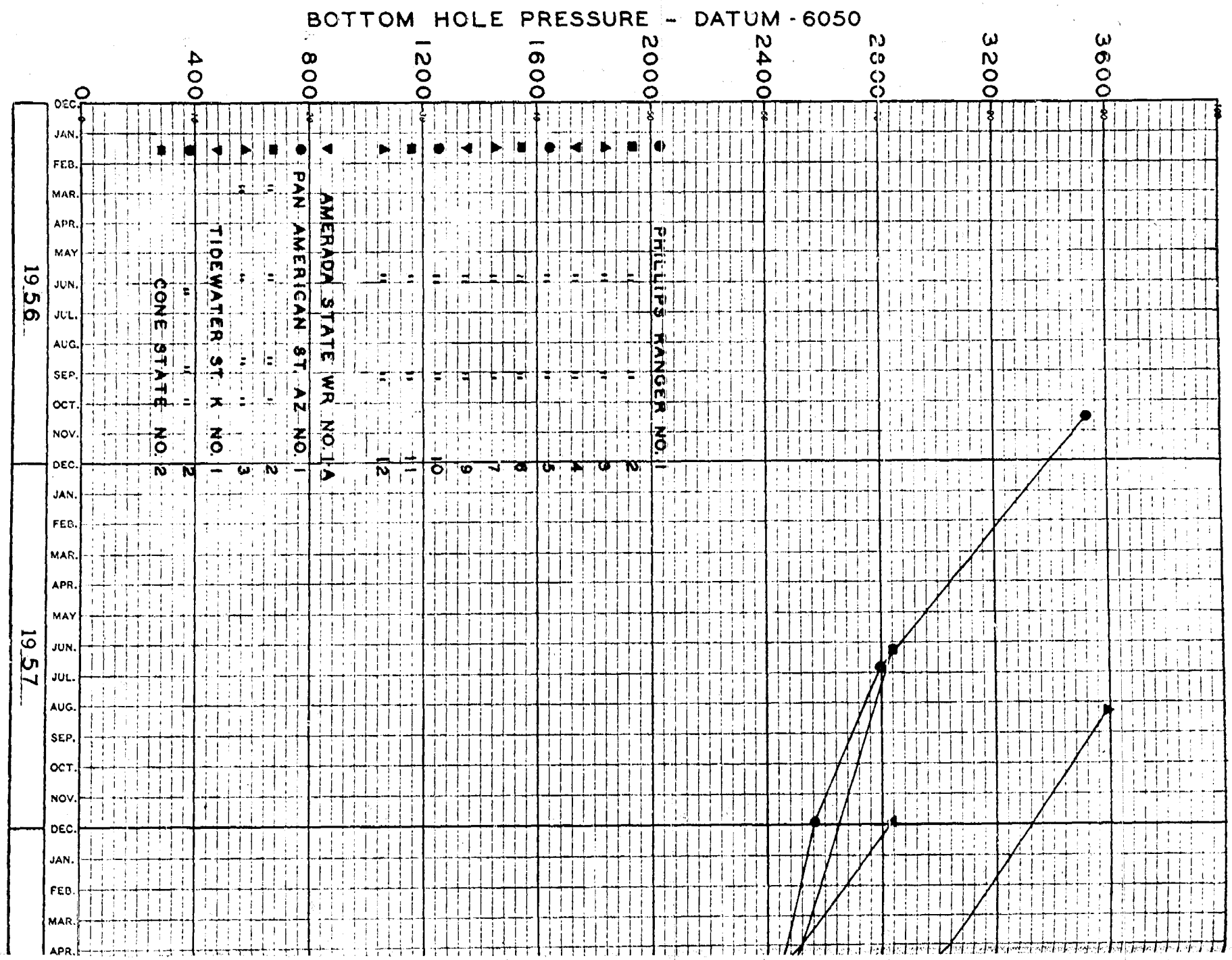
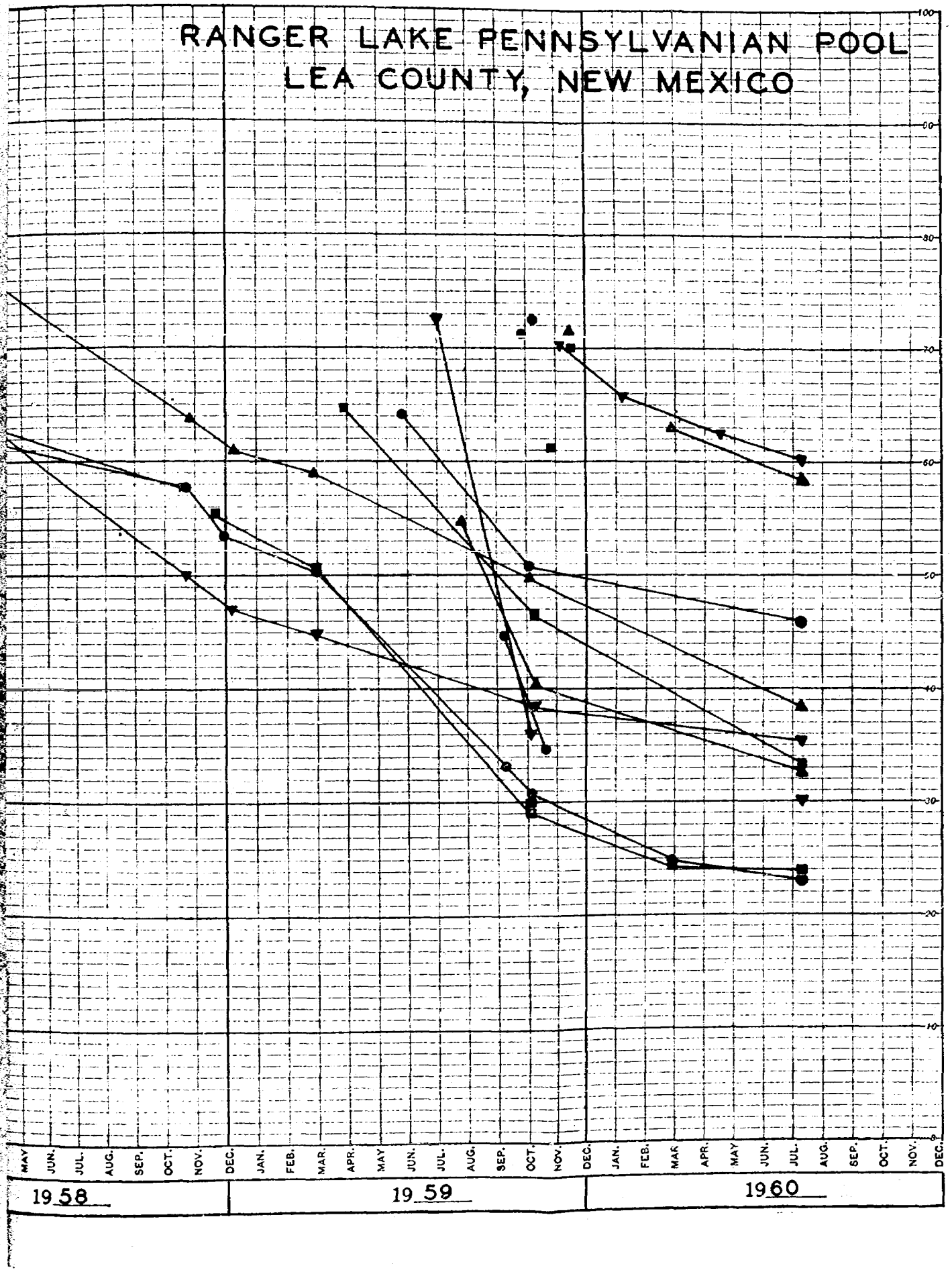
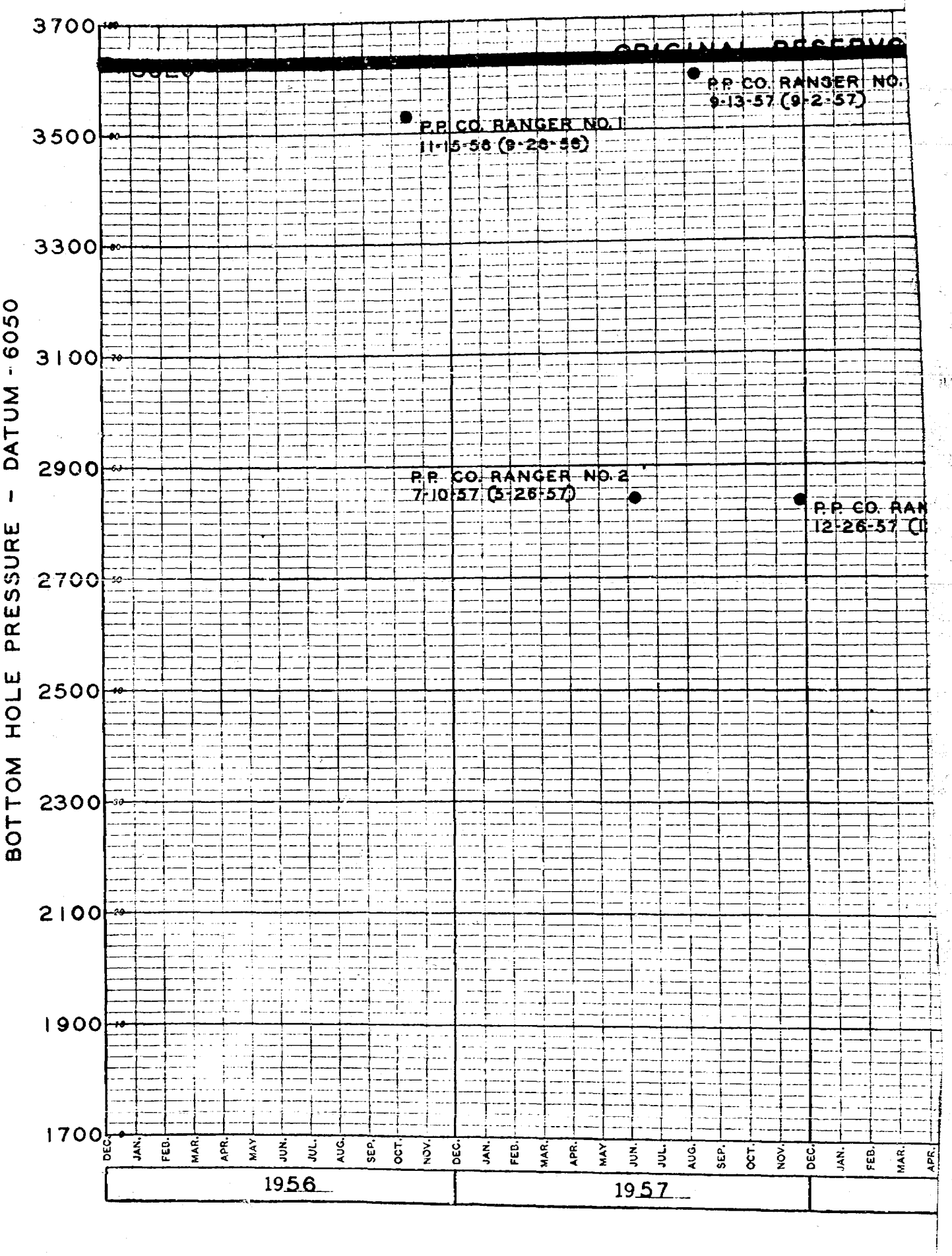
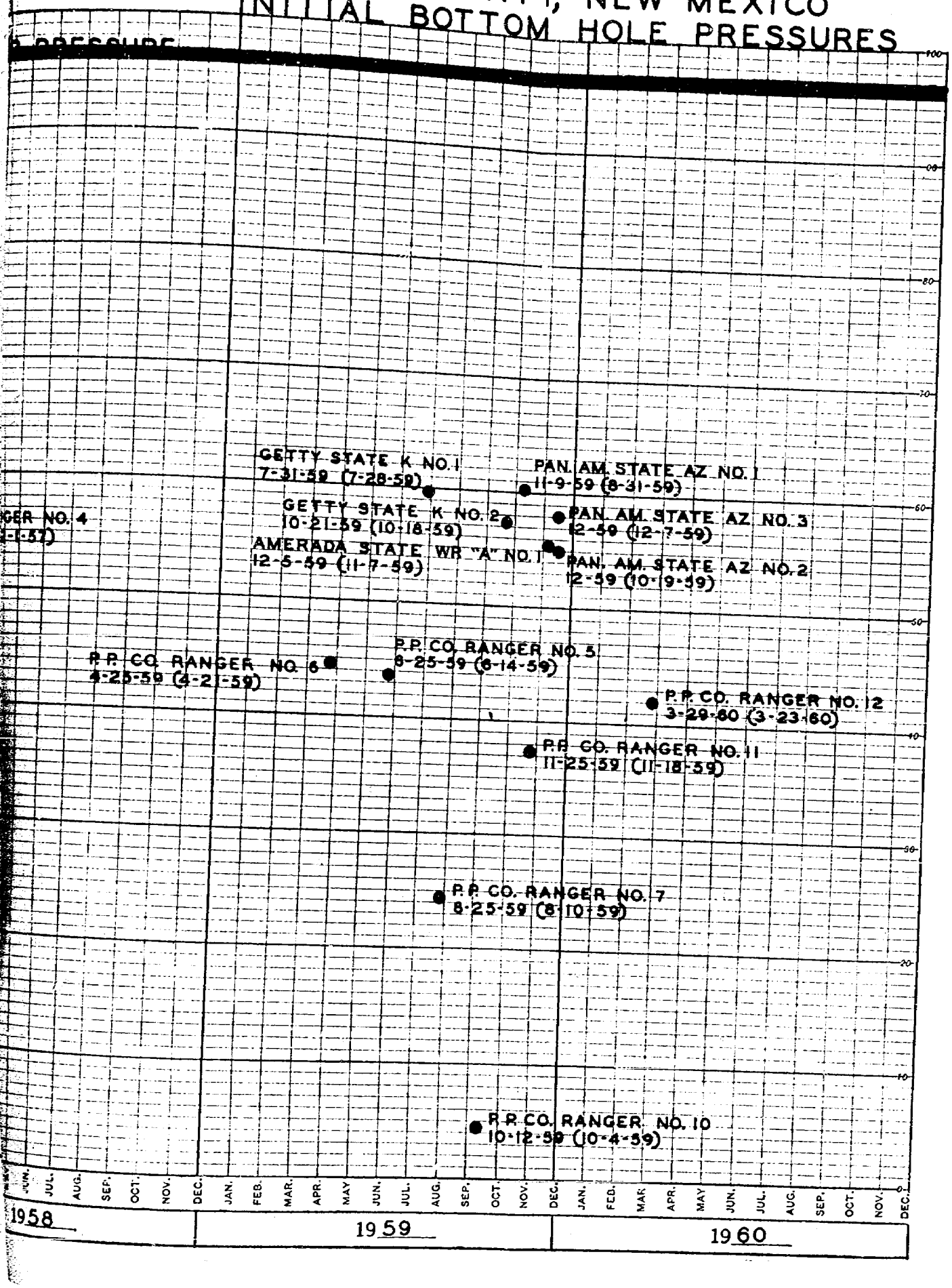


RANGER LAKE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO





RANGER LAKE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO
INITIAL BOTTOM HOLE PRESSURES



NO. 416. 20 DIVISIONS PER INCH BOTH WAYS. 300 BY 200 DIVISIONS.

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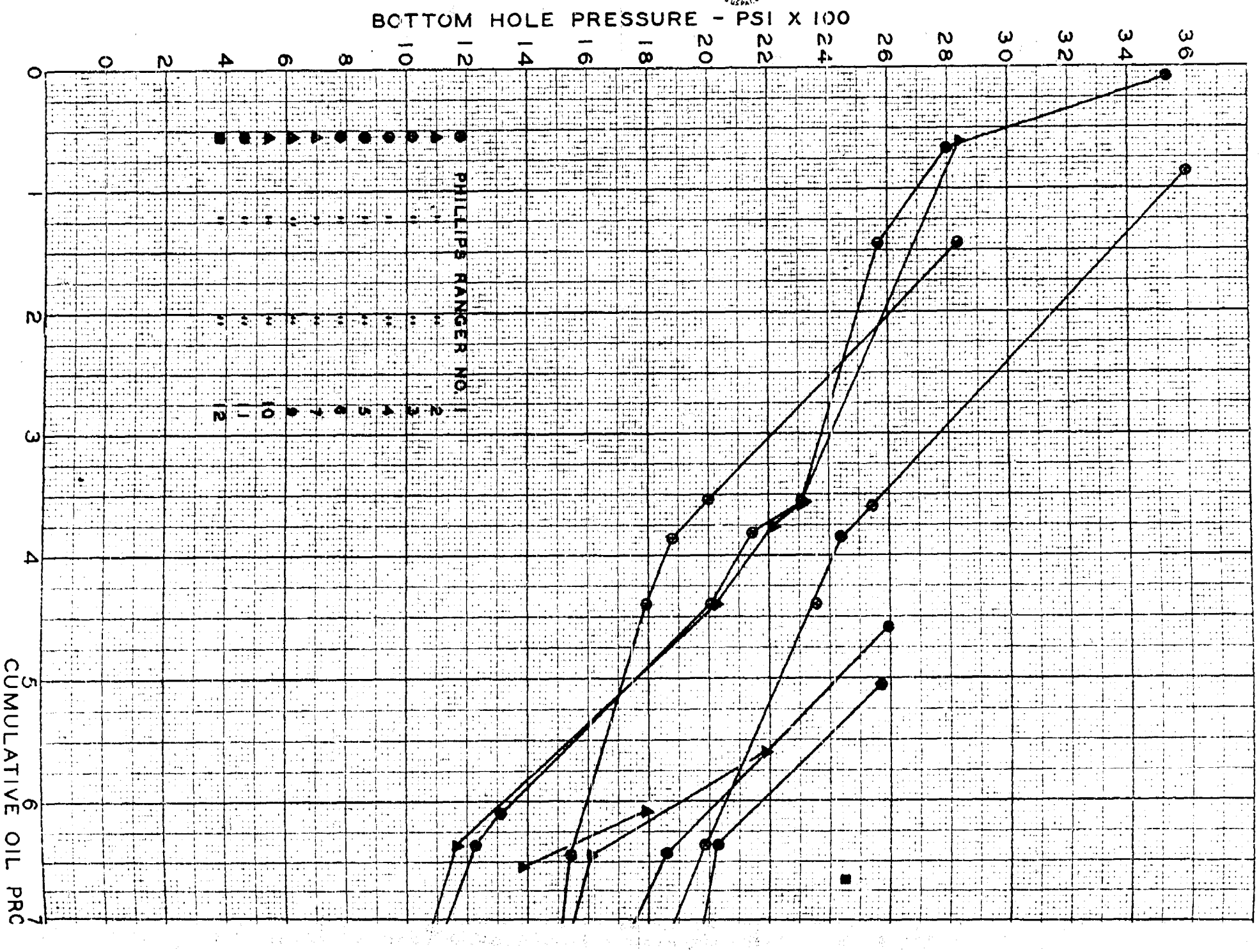
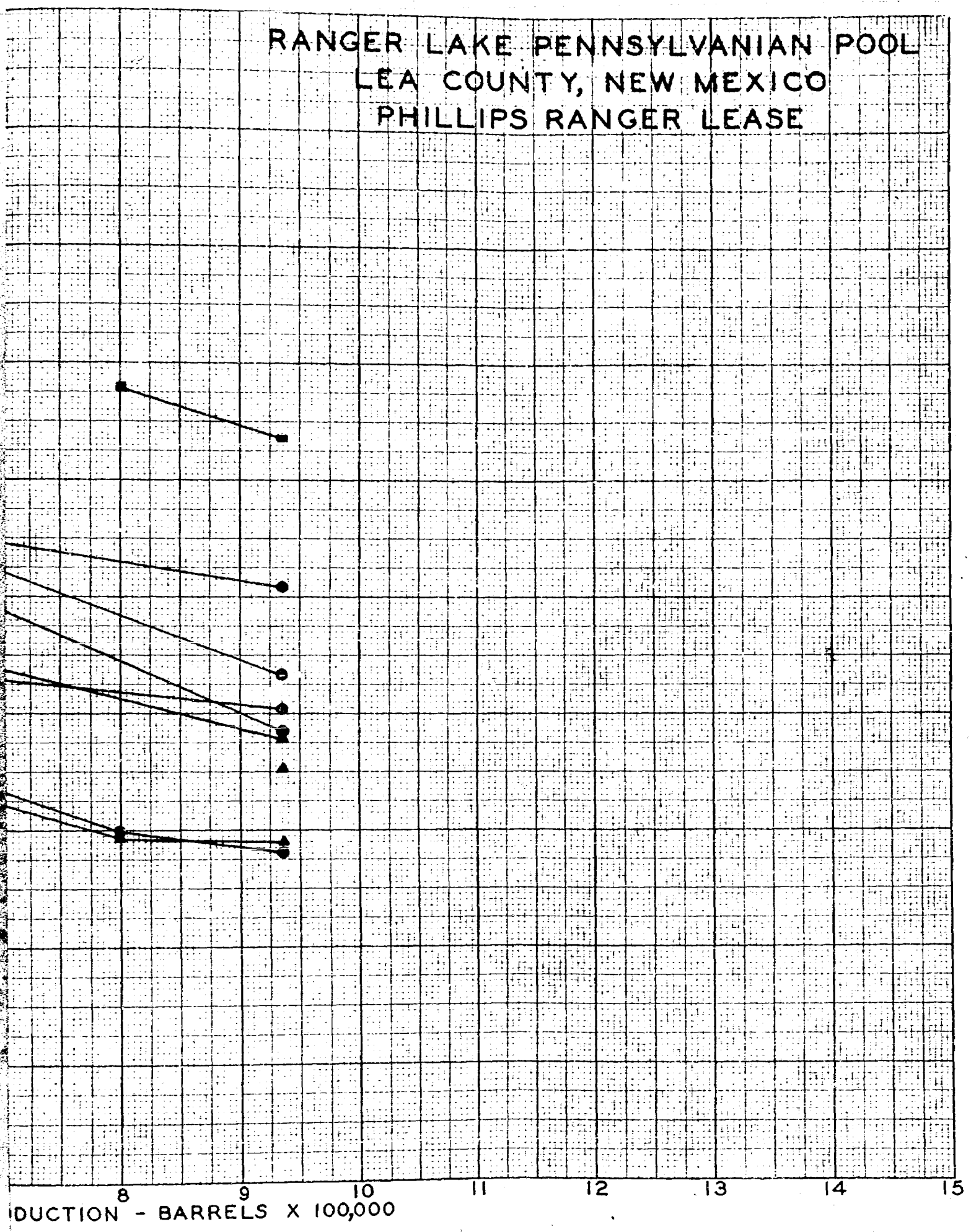


RANGER LAKE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO
PHILLIPS RANGER LEASE



DUCTION - BARRELS X 100,000

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 1668
Order No. R-1418

APPLICATION OF PHILLIPS
PETROLEUM COMPANY FOR AN ORDER
ESTABLISHING TEMPORARY SPECIAL
RULES AND REGULATIONS FOR THE
RANGER LAKE-PENNSYLVANIAN POOL,
LEA COUNTY, NEW MEXICO, TO
PROVIDE FOR 80-ACRE PRORATION
UNITS

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 13, 1959, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 5th day of June, 1959, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Phillips Petroleum Company, seeks the promulgation of temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, to provide for 80-acre proration units.

(3) That the applicant has failed to prove that the Ranger Lake-Pennsylvanian Pool can be efficiently drained and developed on an 80-acre spacing pattern.

(4) That the development of said Ranger Lake-Pennsylvanian Pool on 40-acre proration units will not cause the drilling of unnecessary wells.

(5) That the drilling and spacing of wells in the Ranger Lake-Pennsylvanian Pool should continue to be governed by Rule 104 of the Commission Rules and Regulations.

(6) That the subject application should be denied.

IT IS THEREFORE ORDERED:

(1) That the application of Phillips Petroleum Company for an order establishing temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, to provide for 80-acre proration units be and the same is hereby denied.

(2) That the drilling and spacing of wells in the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, shall continue to be governed by Rule 104 of the Commission Rules and Regulations.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

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

vm/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 1668
Order No. R-1418-A

APPLICATION OF PHILLIPS PETRO-
LEUM COMPANY FOR AN ORDER
ESTABLISHING TEMPORARY SPECIAL
RULES AND REGULATIONS FOR THE
RANGER LAKE-PENNSYLVANIAN POOL,
LEA COUNTY, NEW MEXICO, TO PRO-
VIDE FOR 80-ACRE PRORATION UNITS

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for reconsideration upon the petition of Phillips Petroleum Company for a rehearing in Case No. 1668, Order No. R-1418, heretofore entered by the Oil Conservation Commission of New Mexico on June 5, 1959.

NOW, on this 1st day of July, 1959, the Oil Conservation Commission, a quorum being present, having considered the petition for rehearing,

HEREBY ORDERS:

That the above-styled cause be reopened and a rehearing held at 9 o'clock a.m. on August 13, 1959, at Mabry Hall, State Capitol, Santa Fe, New Mexico.

IT IS FURTHER ORDERED:

That the rehearing be limited to a brief and argument on the legal propositions raised in the petition for rehearing and their application to the facts heretofore presented in Case No. 1668.

IT IS FURTHER ORDERED:

That Order No. R-1418 shall remain in full force and effect pending the issuance of any further order by the Commission in the above-styled cause.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

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

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BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 1668
Order No. R-1418-B

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE RANGER LAKE-PENNSYLVANIAN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 80-ACRE PRORATION UNITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 13, 1959, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," and Order No. R-1418 was entered on June 5, 1959. The case was reopened and a rehearing held on August 18, 1959, at Santa Fe, New Mexico.

NOW, on this 26th day of August, 1959, the Commission, a quorum being present, having considered the application and all the evidence adduced and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Phillips Petroleum Company, seeks the promulgation of temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, to provide for 80-acre proration units.

(3) That the applicant has proved by a preponderance of the evidence now available that the Ranger Lake-Pennsylvanian Pool can be efficiently and economically drained and developed on 80-acre proration units.

(4) That to require development of the Ranger Lake-Pennsylvanian Pool on 40-acre proration units might cause the drilling of unnecessary wells.

(5) That the evidence presented indicates that it is uneconomical to drill wells on 40-acre proration units in the Ranger Lake-Pennsylvanian Pool, and to remain on such a spacing pattern might impede further development in said pool.

(6) That the applicant has waived objection to the continued assignment of a 40-acre allowable to any well presently producing from the Ranger Lake-Pennsylvanian Pool to which cannot be dedicated an 80-acre tract which can reasonably be presumed to be productive of oil from said pool. Only one such well exists, namely the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico.

(7) That temporary 80-acre proration units should be established in the Ranger Lake-Pennsylvanian Pool.

IT IS THEREFORE ORDERED:

(1) That Commission Order No. R-1418, dated June 5, 1959, be and the same is hereby superseded effective September 1, 1959.

(2) That special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, be and the same are hereby promulgated as follows, effective September 1, 1959; provided, however, that the increased allowable provisions contained herein shall not become effective until October 1, 1959.

SPECIAL RULES AND REGULATIONS FOR THE
RANGER LAKE - PENNSYLVANIAN POOL

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

RULE 2. Each well completed or recompleted in the Ranger Lake-Pennsylvanian Pool shall be located on a unit containing 80 acres, more or less, which consists of the N/2, S/2, E/2, or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in said 80-acre unit.

RULE 3. The initial well on any 80-acre unit in said pool shall be located within 150 feet of the center of either the NW/4 or the SE/4 of the quarter section on which the well is located. Any well which was drilling to or completed in the Ranger Lake-Pennsylvanian Pool prior to September 1, 1959, is granted an exception to the well location requirements of this Rule.

RULE 4. For good cause shown, the Secretary-Director may grant exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising a single quarter-quarter section or lot or when the application if for the purpose of joining fractional lots not exceeding 20.49 acres each with a standard unit. All operators offsetting the proposed non-standard unit shall be notified of the application by registered mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the Ranger Lake-Pennsylvanian Pool as the acreage in such non-standard unit bears to 80 acres.

RULE 5. An 80-acre proration unit (79 through 81 acres) in the Ranger Lake-Pennsylvanian Pool shall be assigned an 80-acre proporational factor of 5.67 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

IT IS FURTHER ORDERED:

That operators who propose to dedicate 80 acres to a well in the Ranger Lake-Pennsylvanian Pool must file an amended Commission Form C-128 with the Hobbs District Office of the Commission by September 15, 1959, in order that the well may be assigned an 80-acre allowable on the October proration schedule.

IT IS FURTHER ORDERED:

That any well which was drilled to and producing from the Ranger Lake-Pennsylvanian Pool prior to September 1, 1959, which presently has 40 acres dedicated to it, and to which cannot be dedicated an 80-acre unit which can reasonably be presumed to be productive of oil from the Ranger Lake-Pennsylvanian Pool shall continue to be assigned an allowable equal to normal unit allowable times the 40-acre proportional factor for said pool of 4.67. This exception shall apply only to the well described in Finding No. 6.

IT IS FURTHER ORDERED:

That this case be reopened at the regular monthly hearing of the Commission in August, 1960, to permit any operator to appear and show cause why the Ranger Lake-Pennsylvanian Pool should continue to be developed on 80-acre proration units.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

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

ler

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

COPY

July 1, 1959

Mr. Charlie Spann
Simms Building
Box 1031
Albuquerque, New Mexico

On behalf of your client, Phillips Petroleum Company, we enclose two copies of Order No. R-1418-A issued July 1, 1959, by the Oil Conservation Commission in Case No. 1668.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Enclosures

Copy sent to Chas. White on behalf of Gordon Cone
7-1-59 ft

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

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1220 (R 11-54)

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

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

LA216 DA462 1959 MAY 12 PM 4:32

D MDA200 LONG PD=MIDLAND TEX 12 42 OPNC=

1959 MAY 12 PM 1 4

A L PORTER JR, SECRETARY AND DIRECTOR=

OIL CONSERVATION COMMISSION SANTA FE NMEX=

REGARDING THE HEARING ON 13 MAY 1959 OF THE COMMISSION FOR THE APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING TEMPORARY 80 ACRE SPACING IN THE RANGER LAKE FIELD LEA COUNTY NEW MEXICO, SANTIAGO OIL AND GAS COMPANY IS FAMILIAR WITH THE FACTS INVOLVED IN THIS APPLICATION AND AS AN OPERATOR IN THE AREA WISHES TO RESPECTFULLY URGE THAT THE 80 ACRE SPACING PROGRAM BE ADOPED BY THE COMMISSION=

R L REDLINE JR PRESIDENT SANTIAGO OIL AND GAS CO=

Case 1668

=13 1959 80 80=

No. 18-59

DOCKET: REGULAR HEARING MAY 13, 1959

Oil Conservation Commission, 9 a.m., Mabry Hall, State Capitol, Santa Fe

ALLOWABLE: (1) Consideration of the oil allowable for June, 1959.

(2) Consideration of the allowable production of gas for June, 1959, for six prorated pools in Lea County, New Mexico, and also presentation of purchasers' nominations for the six-month period beginning July 1, 1959; consideration of the allowable production of gas for seven prorated pools in San Juan and Rio Arriba Counties, New Mexico, for June, 1959.

CONTINUED CASES AND REHEARING

CASE 1615: (Rehearing)

In the matter of the rehearing requested by Malco Refineries, Inc. for reconsideration by the Commission of Case No. 1615, Order R-1363. Case 1615 was an application by Stanley Jones, et al, for an order requiring Malco Refineries, Inc. to purchase oil produced from wells in the Dayton-Abo Pool in Eddy County, New Mexico, under the provisions of the Common Purchaser Act. Case 1615 culminated in the entry of Order No. R-1363 which required Malco Refineries, Inc. to purchase all oil tendered to it which is produced from the Dayton Field in Eddy County, New Mexico.

CASE 1522: Application of General Petroleum, Inc. , for an amendment to Order No. R-1299. Applicant, in the above-styled cause, seeks an order amending Order No. R-1299 to provide that any merchantable oil recovered from sediment oil shall not be charged against the allowable for wells on the originating lease, which amendment would revise Rule 311.

CASE 1635: Application of Mapenza Oil Company for an exception to the requirements of Order No. R-1224-A. Applicant, in the above-styled cause, seeks an order authorizing an exception to the salt water disposal requirements of Order No. R-1224-A for its State No. 1-A Well, located in the SE/4 SE/4 of Section 14, Township 18 South, Range 37 East, Hobbs Pool, Lea County, New Mexico.

NEW CASES

CASE 278: Application of Farm Chemical Resources Development Corporation and National Potash Company for an extension of the Potash-Oil Area as set forth in Order R-111-A. Applicants, in the above-styled cause, seek an order extending the Potash-Oil Area as defined in Order R-111-A to include additional acreage in Townships 19, 20, and 21 South, Ranges 29, 31, and 32 East, Lea and Eddy Counties, New Mexico.

CASE 1668: Application of Phillips Petroleum Company for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool and certain adjacent acreage in Lea County, New Mexico, to provide for 80-acre spacing units and well location requirements, and such other provisions as the Commission deems necessary.

CASE 1669: Application of Pan American Petroleum Corporation for the promulgation of temporary special rules and regulations for the Atoka-Pennsylvanian Gas Pool in Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating temporary special rules and regulations for the Atoka-Pennsylvanian Gas Pool in Eddy County, New Mexico, to provide for 320-acre spacing units and for well location requirements.

CASE 1670: Southeastern New Mexico nomenclature case calling for an order creating new pools, deleting a portion of a pool, and extending existing pools in Chaves, Eddy, Lea and Roosevelt Counties, New Mexico.

(a) Create a new oil pool for Queen production, designated as the Chisum-Queen Oil Pool, and described as:

TOWNSHIP 11 SOUTH, RANGE 27 EAST, NMPM
Section 16: SW/4
Section 21: N/2

(b) Create a new gas pool for Yates production, designated as the Chisum-Yates Gas Pool, and described as:

TOWNSHIP 11 SOUTH, RANGE 27 EAST, NMPM
Section 13: SE/4

(c) Create a new oil pool for Delaware production, designated as the Loving-Delaware Oil Pool, and described as:

TOWNSHIP 24 SOUTH, RANGE 27 EAST, NMPM
Section 1: SW/4

(d) Create a new oil pool for San Andres production, designated as the Prairie-San Andres Oil Pool, and described as:

TOWNSHIP 8 SOUTH, RANGE 36 EAST, NMPM
Section 8: SW/4

(e) Delete a portion of the Square Lake Oil Pool described as:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 3: W/2 NW/4

(f) Extend the Cave Pool to include:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 3: W/2 NW/4

(g) Extend the Allison-Pennsylvanian Oil Pool to include:

TOWNSHIP 9 SOUTH, RANGE 36 EAST, NMPM
Section 14: NW/4
Section 15: NE/4

(h) Extend the Crosby-Devonian Gas Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 21: SW/4

(i) Extend the Dean Permo-Pennsylvanian Pool to include:

TOWNSHIP 16 SOUTH, RANGE 37 EAST, NMPM
Section 4: Lots 3, 4, 5, & 6

(j) Extend the Empire-Abo Pool to include:

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4
Section 3: SW/4

(k) Extend the Eumont Gas Pool to include:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 29

(l) Extend the Gladiola-Wolfcamp Pool to include:

TOWNSHIP 12 SOUTH, RANGE 37 EAST, NMPM
Section 26: SW/4

(m) Extend the Jalmat Gas Pool to include:

TOWNSHIP 22 SOUTH, RANGE 35 EAST, NMPM
Section 2: SW/4

(n) Extend the Justis Blinebry Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 24: NW/4

(o) Extend the Justis Fusselman Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 13: NW/4

(p) Extend the Justis McKee Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 25: NE/4

(q) Extend the Leamex-Pennsylvanian Pool to include:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 23: NW/4

(r) Extend the Maljamar Pool to include:

TOWNSHIP 17 SOUTH, RANGE 32 EAST, NMPM
Section 13: SE/4

(s) Extend the North Mason-Delaware Pool to include:

TOWNSHIP 26 SOUTH, RANGE 32 EAST, NMPM
Section 18: NE/4

(t) Extend the East Millman Queen-Grayburg Pool to include:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 12: SE/4

(u) Extend the Milnesand-San Andres Pool to include:

TOWNSHIP 8 SOUTH, RANGE 34 EAST, NMPM
Section 14: E/2

(v) Extend the Pearl-Queen Pool to include:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM
Section 33: NE/4

(w) Extend the Saunders Pool to include:

TOWNSHIP 14 SOUTH, RANGE 33 EAST, NMPM
Section 28: SW/4
Section 29: SE/4

(x) Extend the South Sawyer-San Andres Pool to include:

TOWNSHIP 9 SOUTH, RANGE 38 EAST, NMPM
Section 28: SW/4 SW/4
Section 33: W/2 NW/4

(y) Extend the Shugart Pool to include:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 25: W/2 SW/4
Section 26: SE/4

(z) Extend the North Shugart Queen-Grayburg Pool to include:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 32: W/2
Section 29: SW/4

(aa) Extend the Shugart-Delaware Pool to include:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 27: NW/4

(bb) Extend the Square Lake Pool to include:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 9: S/2

(cc) Extend the Turkey Track Pool to include:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
Section 27: S/4

CASE 1671: Northwestern New Mexico nomenclature case calling for an order extending existing pools in San Juan, Sandoval and Rio Arriba Counties, New Mexico.

(a) Extend the Ballard-Pictured Cliffs Pool to include:

TOWNSHIP 23 NORTH, RANGE 3 WEST, NMPM
Section 17: All
Section 18: All
Section 20: All
Section 28: W/2
Section 29: N/2
Section 33: N/2
Section 34: N/2 & SE/4
Section 35: SW/4

TOWNSHIP 23 NORTH, RANGE 4 WEST, NMPM
Section 11: SE/4
Sections 12 thru 15 inclusive: All
Section 19: N/2

TOWNSHIP 24 NORTH, RANGE 6 WEST, NMPM
Section 21: NW/4

(b) Extend the South Blanco-Pictured Cliffs Pool to include:

TOWNSHIP 27 NORTH, RANGE 5 WEST, NMPM
Section 6: W/2
Section 19: W/2
Section 30: NW/4

(c) Extend the Chimney Rock-Gallup Oil Pool to include:

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
Section 5: SE/4 SE/4
Section 9: NE/4 NE/4

(d) Extend the Horseshoe-Gallup Oil Pool to include:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM
Section 4: W/2 SW/4
Section 6: NE/4 NE/4
Section 10: N/2 SW/4 & SE/4

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM
Section 19: N/2 SE/4
Section 20: S/2 SW/4
Section 29: W/2 NE/4
Section 33: NW/4

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
Section 23: NE/4 SE/4
Section 24: NW/4

(e) Extend the Verde-Gallup Oil Pool to include:

TOWNSHIP 31 NORTH, RANGE 15 WEST, NMPM
Section 26: N/2 NE/4
Section 34: NE/4 & NW/4 SE/4

(f) Extend the Angels Peak-Dakota Pool to include:

TOWNSHIP 27 NORTH, RANGE 10 WEST, NMPM
Section 26: SW/4
Section 35: NW/4

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

June 5, 1959

Mr. Charlie Spann
Simms Building
Box 1031
Albuquerque, New Mexico

Dear Mr. Spann:

On behalf of your client, Phillips Petroleum Company, we enclose two copies of Order No. R-1418 issued June 5, 1959, by the Oil Conservation Commission in Case No. 1668, which was heard on May 13, 1959.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ir/

Enclosures

PHILLIPS PETROLEUM COMPANY

BOX 791
PERMIAN BUILDING
MIDLAND, TEXAS

LAND AND GEOLOGICAL DEPARTMENT
MIDLAND DIVISION

May 26, 1959

Re: Application of Phillips Petroleum Company for a temporary order establishing 80 acre drilling units and promulgating special rules and regulations for the Ranger Lake Pennsylvanian Pool, Lea County, New Mexico.

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

Attention: Mr. Nutter

Dear Sir:

Under separate cover I am forwarding to you one copy of the Radioactive and Electrical Logs run on Phillips Petroleum Company and T&P Coal and Oil Ranger Lake wells #1, #2, #3, #4, and #6, in the Ranger Lake Field, Lea County, New Mexico. As you recall, the Commission requested these logs at our May 14, 1959 hearing.

If we can be of any further service or if there is any additional information which you may require, please let us know.

Yours truly,

C. F. Lawrence,
Division Development Geologist

CFL/lac

cc: Mr. C. F. Keller
Mr. Carl Jones
Mr. C. Spann
Mr. J. N. Perkins

May Regular

BEFORE THE OIL CONSERVATION COMMISSION OF THE

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR A TEMPORARY ORDER ESTABLISHING 80 ACRE DRILLING UNITS, AND PROMULGATING SPECIAL RULES AND REGULATIONS FOR RANGER LAKE - PENNSYLVANIAN POOL IN LEA COUNTY, NEW MEXICO.

No. 1262

A P P L I C A T I O N

Comes now Phillips Petroleum Company and makes this Application for a temporary order promulgating special rules and regulations establishing 80 acre drilling units in the Ranger Lake - Pennsylvanian Pool, Lea County, New Mexico, and in support of the Application states:

I

According to the Commission's Southeast Pool Nomenclature, the Ranger Lake - Pennsylvanian Pool is presently described horizontally as the E/2 and E/2 of NW/4 of Section 23, the NW/4 of NW/4 of Section 25, and the N/2 of NE/4 of Section 26, Township 12 South, Range 34 East, N.M.P.M., Lea County, New Mexico, said designation having been established by this Commission by its Orders R-928, R-1042, and R-1118.

II

Applicant is the owner (with Texas Pacific Coal and Oil Company) and is the operator of four wells recently completed and producing from the Pennsylvanian formation in and in the vicinity of the Ranger Lake - Pennsylvanian Pool as presently described and located in said Township and Range as follows:

Docket Mailed 5-1-57 [illegible]

(1) SE/4 of SE/4 of Section 23, being the discovery well in said pool known as the Phillips-Texas Pacific No. 1 West Ranger Unit Well, completed through casing perforation from 10,312 to 10,351 feet.

(2) NW/4 of SE/4 of Section 23.

(3) SE/4 of NW/4 of Section 23.

(4) NW/4 of NW/4 of Section 25.

III

Two other wells have been drilled into the Pennsylvanian formation in, and in the vicinity of, the Ranger Lake - Pennsylvanian Pool as presently described, one being a producing oil well located in the SW/4 of SW/4 of Section 24 of said Township and Range, and the other being a non-commercial and plugged and abandoned well located in the NW/4 of SW/4 of said Section 24, both drilled by Gordon M. Cone.

IV.

It now appears from the information obtained from the drilling, completion and production of the aforesaid wells that the Pennsylvanian formation will probably be productive of oil in at least the W/2 of W/2 of Section 13; all of Sections 14, 15, 22, 23, 26 and 27; W/2 of NW/4 and SW/4 of SW/4 of Section 24; and W/2 of W/2 of Section 25 of Township 12 South, Range 34 East, Lea County, New Mexico.

V.

Of the area hereinabove stated to be probably productive of oil in the Pennsylvanian formation the following is State Land subject to control of the Commissioner of Public Lands of the State of New Mexico and is designated as the West Ranger Unit Area:

All of Section 23;

W/2 of NW/4 of Section 24;

NW/4 of Section 25;

All of Section 26.

Applicant is the operator and Texas Pacific Coal and Oil Company is the sole non-operating interest owner of said West Ranger Unit Area. The West Ranger Unit Agreement was approved by this Commission by its Order No. R-797 in Case No. 1057, dated April 27, 1956, and by the Commissioner of Public Lands on May 2, 1956.

VI.

That a well density of no more than one well to each 80 acres has heretofore been maintained in the development of the above Pool.

VII.

That, according to the belief of Applicant and based upon information now available, one well can efficiently and economically drain 80 acres in said Pool; that temporary rules and regulations to be effective for a period of one year or until further order of the Commission, should be entered establishing 80 acre drilling units for said Pool and in the area above described, each unit to be half of a quarter section of the United States Land Surveys and the well thereon to be located in the center of one of the two 40-acre quarter quarter sections comprising the unit, with a tolerance allowance of up to 150 feet in any direction from the center of the quarter quarter section when such tolerance is necessary in order to avoid structures or natural obstructions rendering drilling impossible or impracticable.

VIII.

Such spacing of wells as herein requested will insure orderly development of said Pool, protect correlative rights, prevent possible waste, and prevent the economic loss caused by the drilling of unnecessary wells.

IX.

Applicant further requests that the Commission enter such other Special Rules and Regulations for the Ranger Lake - Pennsylvanian Pool as it shall deem proper and justified in view of the evidence presented at the hearing herein requested, including provisions for the taking and reporting of proper gas-oil ratios and bottom-hole pressure tests.

X.

That any order granting such temporary rules and regulations can cause no injury to any party interested in said Pool or to the reservoir itself because if additional development and reservoir information indicates that 80-acre spacing is not desirable for said Pool, additional wells can always be drilled later and the Pool developed to a density of 40-acres. On the other hand, if temporary 80-acre spacing is not adopted, wells drilled on 40-acre locations will establish the pattern for the field so that it will be impossible as a practical matter to adopt 80-acre spacing later if additional reservoir information shows that lesser spacing is not required to drain the reservoir and would cause waste and the drilling of unnecessary wells. Applicant respectfully suggests that the Commission should at least temporarily apply for this Pool the truism that "fill-in" wells can always be drilled later if closer spacing is deemed desirable, but that unnecessary and wasteful wells (in this Pool costing $200,000 each) can never be "undrilled".

XI.

The other operators owning interests in the Ranger Lake-Pennsylvanian Pool (and in the areas to be affected by the temporary order herein sought), so far as are known to applicant, are as listed on Exhibit A attached.

WHEREFORE, Phillips Petroleum Company, the applicant herein, prays the Commission to set this application for a public hearing before an Examiner at such time and place as the Commission may designate, and that notices be issued according to law, and that after such hearing this application be in all things granted. Pursuant to Rule 1203 of the Rules and Regulations of this Commission, applicant states that it prefers that the hearing be held at as early a date as may be convenient for the Commission and at such place as will allow the earliest possible setting.

CARL W. JONES
P. O. Box 791
Midland, Texas

GRANTHAM, SPANN AND SANCHEZ

By _____
904 Simms Bldg., Albuquerque, N.M.

Attorneys for Applicant
Phillips Petroleum Company

Texas Pacific Coal and Oil Company
P O Box 2110
Fort Worth, Texas

Gulf Oil Corporation
Petroleum Building
Roswell, New Mexico

H. J. Porter
Gulf Building
Houston, Texas

The Ohio Oil Company
Midland National Bank Building
Midland, Texas

Tide Water Oil Company
Petroleum Building
Midland, Texas

The Pure Oil Company
J. P. White Building
Roswell, New Mexico

Continental Oil Company
Petroleum Building
Roswell, New Mexico

Magnolia Petroleum Company
1116 West First Street
Roswell, New Mexico

Humble Oil and Refining Company
First National Bank Building
Roswell, New Mexico

Monsanto Chemical Company
602 West Missouri
Midland, Texas

Pacific Western Oil Company
c/o Tide Water Oil Company
Petroleum Life Building, Midland, Texas

Joseph I. O'Neill, Jr.
410 West Ohio, Midland, Texas

Gordon M. Cone
Lovington, New Mexico

Vickers Petroleum Corporation
P O Box 2240, Wichita 1, Kansas

EXHIBIT A

Transcript of Hearing, Case No. 1668, dated

May 14, 1959, mailed to Ada Dearnley on August 5, 1959.

vem

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE RANGER LAKE - PENNSYLVANIAN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 80-ACRE PRORATION UNITS.

CASE NO. 1668
ORDER NO. R-1418-B

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9'oclock a.m. on May 13, 1959, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," and Order No. R-1418 was entered on June 5, 1959. The case was reopened and a rehearing held on August 13, 1959, at Santa Fe, New Mexico.

NOW, on this _____ day of August, 1959, the Commission, a quorum being present, having considered the application and all the evidence adduced and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Phillips Petroleum Company, seeks the promulgation of temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, to provide for 80-acre proration units.

(3) That the applicant has proved by a preponderance of the evidence now available that the Ranger Lake-Pennsylvanian Pool can be efficiently and economically drained and developed on 80-acre proration units.

(4) That to require development of the Ranger Lake-Pennsylvanian Pool on 40-acre proration units might cause the drilling of unnecessary wells.

(5) That the applicant has waived objection to the continued assignment of a 40-acre allowable to any well presently producing from the Ranger Lake-Pennsylvanian Pool ~~and~~ to which an 80-acre tract which can reasonably be presumed to be productive of oil from said pool cannot be dedicated. ~~cannot be dedicated~~. Only one such well exists, namely, the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico.

(6) That temporary 80-acre proration units should be established in the

Ranger Lake Pennsylvanian Pool.

IT IS THEREFORE ORDERED:

(1) That Commission Order No. R-1418 dated June 5, 1959, be and the same is hereby superseded effective September 1, 1959.

(2) That special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, be and the same are hereby promulgated as follows, effective September 1, 1959; provided, however, that the increased allowable provisions contained herein shall not become effective until October 1, 1959.

SPECIAL RULES AND REGULATIONS FOR THE
RANGER LAKE-PENNSYLVANIAN POOL

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

RULE 2. Each well completed or recompleted in the Ranger Lake-Pennsylvanian Pool shall be located on a unit containing 80 acres, more or less, which consists of the N/2, S/2, E/2, or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in ~~the~~ said 80-acre unit.

RULE 3. ~~Each well completed or recompleted in the Ranger Lake-Pennsylvanian Pool~~ The initial well on any 80-acre unit in said pool shall be located within 150 feet of the center of either the NW/4 or the ~~SE/4 of the quarter section~~ on which the well is located. Any well which was drilling to or completed in the Ranger Lake-Pennsylvanian Pool prior to September 1, 1959, is granted an exception to the well location requirements of this Rule.

RULE 4. For good cause shown, the Secretary - Director may grant exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising a single quarter-quarter section or lot or when the application is for the purpose of joining fractional lots not exceeding 20.49 acres each with a standard unit. All operators offsetting the proposed non-standard unit shall be notified of the application by registered mail, and the application shall state that such notice has been furnished. The Secretary - Director may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the Ranger Lake-Pennsylvanian Pool as the acreage in such non-standard unit bears to 80 acres. ~~the acreage in a standard unit in said Ranger Lake-Pennsylvanian Pool.~~ (79 through 81 acres)

RULE 5. An 80-acre proration unit in the Ranger Lake- Pennsylvanian Pool shall be assigned an 80-acre proporational factor of 5.67 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

IT IS FURTHER ORDERED:

That Operators who propose to dedicate 80 acres to a well in the Ranger Lake-Pennsylvanian Pool must file an amended Commission Form C-128 with the Hobbs District Office of the Commission by September 15, 1959, in order that the well may be assigned an 80-acre allowable on the October proration schedule.

IT IS FURTHER ORDERED:

That any well which was drilled to and producing from the Ranger Lake - Pennsylvanian Pool prior to September 1, 1959, which presently has 40 acres dedicated to it, and to which an 80-acre unit which can reasonably be presumed to be productive of oil from the Ranger Lake-Pennsylvanian Pool ~~cannot be dedicated~~ cannot be dedicated, shall continue to be assigned an allowable equal to normal unit allowable times the 40-acre proportional factor for said pool of 4.67. This exception shall apply only to the well described in Finding No. 6

IT IS FURTHER ORDERED:

That this case be reopened at the regular monthly hearing of the Commission in August, 1960, ~~and~~ to permit ~~the~~ any operator to appear and show cause why the Ranger Lake-Pennsylvanian Pool should continue to be developed on 80-acre proration units.

Done at.....

Memo

From
Elvis A. Utz
Gas Engineer

To I do not agree that Cone should be given a proration formula ~~of~~ different from the rest of the pool. He is not entitled to this exception any more than any other well in any oil or gas pool. Phillips agreed to this only to eliminate his objection to 80 acre ~~spacing~~ and we are going along.

Elvis A. Utz

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

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

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE RANGER LAKE-PENNSYLVANIAN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 80-ACRE PRORATION UNITS

CASE NO. 1668
Order No. R-1418

MEMORANDUM BRIEF

STATEMENT OF THE CASE

Phillips Petroleum Company heretofore filed their application for an order establishing temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, to provide for 80-acre spacing and proration units.

After the requisite notice, a hearing on the application was had on May 13, 1959. At the hearing, applicant presented the only evidence which was, of course, in support of the application. An original protestant, Gordon Cone, withdrew his objection to the application during the hearing. Thereafter, the Commission on June 9, 1959, entered its order denying the application and made two findings upon which its order was based. They were -

(1) That the applicant has failed to prove that the Ranger Lake-

Pennsylvanian Pool can be efficiently drained and developed on an 80-acre spacing pattern.

(2) That the development of said Ranger Lake-Pennsylvanian Pool on 40-acre proration units will not cause the drilling of unnecessary wells.

Phillips has filed this motion for rehearing asserting generally that the order of the Commission is erroneous in that it was issued in violation of the rules and statutes that bind the Commission in its determinations; that specifically the Commission's findings of fact Nos. 3 and 4 were in each instance made contrary to the uncontradicted and substantial evidence in the record.

THE EVIDENCE

The only evidence in this case was presented by the applicant and consists of the testimony of Mr. Lawrence, a geologist, and Mr. Berthelot, a petroleum engineer, and certain exhibits prepared and presented by these witnesses. In addition, and in a final statement, the attention of the Commission was called to certain prior orders that had been entered granting permanent rules and regulations for 80-acre spacing in two Pennsylvanian pools in Lea County, New Mexico.

Mr. Lawrence and Mr. Berthelot were both qualified experts in their particular field and their qualifications were accepted by the Commission in each instance.

A general summary of applicant's evidence is as follows:

Exhibit 1 was a structure map of the field constructed on the top of the Ranger Lake Pay Zone (Tr. 4). The exhibit showed 6 wells had been completed by Phillips in the field (Tr. 6). An additional well, the

J. C. Barns No. 1 had been completed a few days prior to the hearing (Tr. 6). Likewise, Gordon Cone had drilled a well in the field which was producing.

The eastern limits of the field had been established, but the northern, western and southern limits had not. (Tr. 6).

Additional wells have been staked and at least 10 wells will be drilled on 80-acre spacing within the next year (Tr. 7). The area is being developed on 80-acre spacing at this time (Tr. 7).

Exhibit 2 was a cross-section of the field made up from radio active logs run on Phillips' western Ranger Lake Unit No. 1, 2, 3 and 4 wells. The exhibit shows the completion data and initial pressure of the 4 wells. The quality of the wells is dependent upon the porosity development of the upper zone. The wells are producing from a common source of supply and within a common reservoir.

From the examination and tests made, Mr. Lawrence gave it as his opinion that there is "definite communication between wells and one well would drain 80 acres". (Tr. 11) His opinion is basod upon the correlativeness of each identical zone throughout each well, as well as good porosity and permeability (Tr. 11). The sample analysis in the field indicates formations and lithology that lend itself to good communication between wells. (Tr. 52).

Mr. Lawrence further stated that as much ultimate recovery of oil would result by developing on 80 acres as would result in developing on 40's (Tr. 32). He felt that additional evidence would be availabe at the end of a year to confirm the opinion that one well would drain 80 acres (Tr. 59)

Mr. Lawrence's opinion was confirmed by the engineering study made of the field and the conclusions therefrom which appear in the testimony of Mr. Berthelot, the petroleum engineer.

Mr. Berthelot made a general engineering study of the Ranger Lake-Pennsylvanian Field. He introduced Exhibit 4, which is a summary of engineering features which show the characteristics of the field and of the reservoir rock.

Exhibit 5 shows production data.

Exhibits 6, 7, 8 and 9 are concerned with pressure data and graphically illustrate the pressure decline that has occurred in the field as the wells have been drilled and produced.

Exhibits 10, A, B, C and D is a list of individual well tests taken throughout the life of the field. The tests indicate the oil in the various wells has been in intimate communication (Tr. 70).

Exhibits 11 and 12 are calculations of the drainage area of one well in the field using the formulas described in these exhibits, which confirm each other. It is clear from these exhibits that one well will drain in excess of 80 acres in the Ranger Lake-Pennsylvanian Field (Tr. 72).

Essentially then, we have described the tests made of the wells now producing and based upon these tests have confirmed by mathematical formula and calculations, our assertions that one well would drain in excess of 80 acres.

The fact that the Commission in their Order No. 9892 entered in Cause No. 1102, establishing 80-acre spacing in the Dean Permo-Pennsylvanian Pool and their Order No. R895 in Case No. 1125 establishing permanent 80-acre spacing in the Lane-Pennsylvanian Pool would be

evidence that the Pennsylvanian formation in Lea County, New Mexico in two instances, at least, has been found to drain 80 acres. This would be some evidence of a characteristic of the Pennsylvanian formation.

The Commission says that such evidence is not substantial in effect by finding that we have failed to prove that one well would efficiently drain 80 acres.

Applicant's Exhibit 3 which was described and introduced through Mr. Lawrence is an economic analysis of the type which is made by Phillips prior to drilling and developing a field and is prepared for the purpose of determining whether a company should invest their money in a particular area.

The exhibit shows that in the Ranger Lake-Pennsylvanian Field by drilling on 80 acre units, the Company would receive an annual rate of return of 43 percent (Tr. 13). Drilling on 40 acre units, they would sustain a loss (Tr. 14). The exhibit shows the estimated reserves, the estimated recoverable oil with its value and the drilling costs. As a matter of policy, unless a well will make a return of 20 to 22 percent annually for the company, Phillips will not drill the well (Tr. 14).

Mr. Berthelot confirmed Mr. Lawrence's testimony concerning the economics of the field except that he felt Mr. Lawrence was optimistic in his calculations or estimates concerning possible profits in drilling on 80's as opposed to 40's.

Mr. Berthelot has made a separate analysis of the economics of the field and states that drilling on 40 acres in the Ranger Lake-Pennsylvanian Field is not commercial (Tr. 74). The exhibits and testimony reflect that a well in this field will cost from $170,000.00 to $200,000.00 per

well with the discovery well costing approximately $300,000.00 (Tr. 89). Considering these factors and otherwise describing in detail the basis for estimates for possible recoverable reserves and the price thereof, it is clear that drilling on 40-acres in this field would be uneconomic.

Since the evidence establishes that in this field, as much oil can be recovered by drilling on 80's as 40's, then it follows that by refusing to grant the application and establish the temporary rules, the Commission has caused the drilling of unnecessary wells.

It will take from 30 to 35 wells to develop the pool (Tr. 75) and therefore, it can be seen that the Commission is requiring the operators to drill an additional 30 to 35 wells at a cost of some $180,000.00 per well or a total unnecessary expenditure of some $5,000,000.00.

POINTS, AUTHORITIES AND ARGUMENTS

It should be first pointed out that Phillips's application is for temporary rules only, these rules to be effective for a period of one year or until further order of the Commission. Under such circumstances it would seem that less proof should be required than would be necessary if permanent rules were being sought.

It should be again noted that the New Mexico Oil Commission, by Order No. R-892 entered in Case No. 1102, established permanent 80-acre spacing in the Dean-Pennsylvanian Pool, and by Order R-895 in Case No. 1125 established 80-acre spacing in the Lane-Pennsylvanian Pool, both in Lea County, New Mexico. (Tr. 104).

We point this out for the reason that the construction placed upon a particular law, rule or regulation by an administrative agency or officer is to be given weight in considering how much law, rule or regulation should be subsequently applied. Sedalia ex rel Ferguson vs. Shell Pet. Corp. (8 CCA) 81 F. 2d. 193

In other words, exceptions to rule 104 as applied to the Pennsylvanian formation in Lea County, New Mexico, have been heretofore granted on a permanent basis, and this precedent is entitled to some weight in considering whether temporary rules should be granted for the same Formation in subsequent applications.

The Order and decision of the Commission in this case are clearly erroneous because the Commission has simply rejected the clear, substantial and uncontradicted evidence in the case and made findings contrary thereto. This is in violation of the rules of evidence and decisions that bind administrative tribunals under our New Mexico law, and such an order will be set aside by our courts on appeal.

Rule 1212 of the Oil Conservation Commission Rules provides:

> "RULES OF EVIDENCE - Full opportunity shall be afforded all interested parties at a hearing to present evidence and to cross-examine witnesses. In general, the rules of evidence applicable in a trial before a court without a jury shall be applicable, provided that such rules may be relaxed, where, by so doing, the ends of justice will be better served. No order shall be made which is not supported by competent legal evidence."

By the Commission's own rule an order must be supported by "competent legal evidence" and the present order is not.

Regardless of this Rule of the Commission our Supreme Court has laid down certain basis evidentiary precepts which control our Courts and also our administrative tribunals in their decisions. As applied to this case they are:

1. Administrative tribunals are governed by the substantial evidence rule. That is to say, their findings must be supported by substantial evidence.

> Ferguson Steere Motor Co. v. State Corp. Comm.
> 62 N. M. 143, 306 P2 637

2. Findings of fact may not be based upon surmise, speculation or conjecture.

Southern Union Gas Co. v. Cantrell
241 P. 2d 1200, 56 N.M. 183

3. Before a finding of fact will be sustained, there must be some evidence in the records of a tangible nature to support such a finding.

DeBaca v. Kohn
49 N. M. 225, 161 P 2d 630
Medler v Henry, 101 P 2d 398, 44 N.M. 275

4. A Court may not arbitrarily reject uncontradicted testimony or evidence.

Mracek v Dunifon, 55 N.M. 342, 233 P 2d 792

5. Rules relating to weight, applicability or materiality of evidence may not be limited or relaxed by an administrative tribunal.

Ferguson Steere v. State Corp. Comm.,
314 P 2d 894, 63 N.M. 137

6. A finding of fact which is not supported by evidence of a probative character is arbitrary and cannot be sustained.

Baca v Chaffin, 253 P 2d 309, 57 N.M. 17

7. An order of an administrative body which is not based upon the substantial evidence may properly be described as conjectural, speculative, unlawful, unreasonable, arbitrary and capricious, and cannot be sustained.

Baca v Chaffin, 253 P 2d, 309, 57 N.M. 17
Ferguson Steere v. State Corp. Comm.,
314 P 2d 894, 63 N.M. 137

There are other cases on the subject, but these are sufficient to clearly point up the basic concept involved.

In this case we have two qualified experts testifying concerning studies and tests made in the Ranger Lake-Pennsylvania Pool. These experts gave it as their opinions that:

A. One well would drain in excess of 80 acres in the field.

B. That as much ultimate recovery would result from drilling on 80's as on 40's.

C. That the costs of the wells were such that drilling on a 40-acre pattern was uneconomic, and a loss to the operator would result.

D. That the drilling of wells on 40-acre spacing was an unnecessary expense to the operators.

E. That by drilling on 80's the development of the field would be encouraged and enhanced.

F. That at the end of a year additional information would be available from which the opinions given would be further confirmed.

G. That if it were determined that additional fill-in wells were required they could be drilled, but that unnecessary wells could not be "undrilled".

The evidence introduced stands uncontradicted and we believe is substantial evidence under any definition of that term and clearly so under our New Mexico decisions. The Commission simply rejected this evidence and entered an Order which is based on no evidence in the record. The findings upon which this Order are based are clearly erroneous.

As we have heretofore pointed out a finding of fact of an administrative tribunal must be based upon substantial evidence. A clear definition of substantial evidence is found in Lumpkins vs McPhee, 59 N. M. 442 @ 453, 286 P2d 299, as follows:

> "Ordinarily, the evidence is deemed substantial if it tips the scales in favor of the party on whom rests the burden of proof, even though it barely tips them. He is then said to have established his case by a preponderance of the evidence. A finding

in his favor on the decisive issue is thus said to be suppored by substantial evidence."

Substantial evidence so as to support a finding is merely the preponderance of evidence. See also 42 Am. Jur P. 467 (Public Administrative Law Pr. 132).

"Preponderance is a greater weight of credible evidence."

See: Campbell v Campbell, 310 P 266, 62 N. M. 330

In Lopez v Thompson, 42 N. M. 601, 82 P 2d 921, it was held "In civil cases, where circumstantial evidence is relied upon for recovery, the burden of proof resting on the plaintiff is merely to make up the more probable hypothesis. It is unnecessary that his proof attain a degree that excludes every other reasonable conclusion as in a criminal case."

Our proof which was undisputed, established that, based upon the evidence available, one well in the Ranger Lake Field would drain far in excess of 80 acres. By the very nature of things, this evidence is circumstantial in that it is a conclusion arrived at from certain real or direct evidence which included pressure tests, core analysis, decline curves, etc. We could, of course, not exclude entirely the possibility one well would not drain 40 acres, but we were not required to do so under the rule. The applicant's case was established by the uncontradicted testimony of two expert witnesses, who, although employees of Phillips Petroleum Company, had their qualifications accepted by the Commission. In 42 Am Jur Page 568 (Public Administrative Law Par. 132) it is stated:

> "Administrative officers are not bound to accept as conclusive the testimony of expert witnesses, but they may not disregard expert testimoney and reach a conclusion contrary thereto, where such conclusion has no support in any other evidence before the officer or in their own knowledge or experience."

It may be contended that Mr. Lawrence and Mr. Berthelot were employees of Phillips Petroleum Company, the applicant, and therefore, in-

terested witnesses. This makes no difference under the proposition above announced. In Dempster v Burnet; 46 Fed 2d 604 and Bonwit-Teller & Co. v. Commissioner of Internal Revenue, CCA 2d, 53 Fed 2d 381, 82 ALR 325, it was held that an expert witness's testimony if uncontradicted, cannot be ignored or rejected even if he is an interested witness.

New Mexico likewise has held in several cases that "the testimony of a witness whether interested or disinterested, cannot arbitrarily be disregarded by the trier of the facts." See Medler v Henry 44 N.M. 275, 101 P 2d 398; Heron v Gayler, 52 N.M. 23, 190 P 2d 208. In this later case, in a very short opinion, the court summarily reversed a trial court that had failed to consider the testimony of a party to the action. It is stated that the testimony was such that there was no inherent improbability as to its truthfulness and accordingly it could not be arbitrarily disregarded and this notwithstanding the fact that the testimony was that of a party to the suit and one who was interested in the outcome. See also, Citizens Finance Co. v Coe, 47 N.M. 73, 123 P 2d 550. See also, Mracek v Dunifon, 55 N.M. 342, 233 P 2d 792 and Morris v Cartright 258 P 2d 719, 57 N.M. 328, on the point that the trial court may not arbitrarily reject uncontradicted evidence.

In the Cartright case, the trial court directed a verdict against the plaintiff in behalf of Cartright Hardware on the basis that the undisputed evidence in the record showed that at the time of the collision, the truck involved was being driven by an employee of the Cartright Hardware Company without authority or permission of the owners. The court stated that the evidence on this point was undisputed and must, therefore, be accepted as true. It was argued by appellant that certain inferences and deductions should be indulged in because of the fact that tools and pipe were found in

the car and the driver was in working clothes at the time of the collision. The court said,

> "This claim leads into the field of speculation. The courts generally hold that such doubtful inferences are not sufficient to contradict positive testimony."

This becomes important in our present case in view of the fact that all of the positive evidence resulting from pressure tests, pressure decline curves and other direct evidence indicates that one well would drain in excess of 80 acres. There is no evidence to the contrary. Any finding to the contrary results from mere speculation which is not proper under the rule.

It is pure speculation and conjecture to find that one well would not drain in excess of 80 acres, which is the effect of the Commission's finding No. 3.

This is likewise true as to its finding No. 4. If one well will drain in excess of 80 acres, as the undisputed, substantial evidence established, then development on a 40-acre pattern results in unnecessary wells being drilled. In this case, some 30 unnecessary wells costing approximately $180,000.00 per well. The evidence is undisputed that development on a 40-acre pattern will result in losses; that 80 acre spacing will result in as much ultimate recovery of oil as on 40's. There is no evidence, substantial or otherwise supporting in these findings and we respectfully submit, under the cases cited and discussed, they are erroneous.

It is true that in hearings before administrative tribunals, the rules as to admissibility of evidence are relaxed. However "Rules relating to weight, applicability or materiality of evidence are not limited or relaxed."

Ferguson-Steere v. Corporation Commission, 63 N.M. 137, 314 P 2d 894.

A general statement of the proposition and the reasons for it are found in 42 Am Jur P. 462 (Public Administrative Law Par. 129) as follows:

> "The more liberal the practice in admitting testimony, , the more imperative the obligation to preserve the essential rules of evidence by which rights are asserted or defended. Administrative officers cannot act upon their own information. All parties must be fully appraised of the evidence submitted or to be considered and must be given an opportunity to cross-examine witnesses, to inspect documents, to offer evidence in explanation or rebuttal".

And in Paragraph 130 at Page 464,

> "Papers in the files of a Commission, special knowledge gained from experience or other hearings or information secured by independent investigation apart from the hearing and not made known upon the hearing is not evidence properly in the case. It is the denial of the fundamentals of the trial for a Commission to reach a decision on evidentiary facts not spread upon the record and upon information secretly collected and not disclosed which the party complaining had no opportunity to examine or analyze, explain or rebut."

In Baca v Chaffin, 57 N.M. 17, 253 P 2d 309, which involved an appeal from a decision of the State liquor director, our Supreme Court held:

> "A trial which proceeds to a conclusion resulting in a quasi-judicial determination depriving a party of legal rights is unfair and arbitrary if the determination is necessarily based on a finding of fact which is not supported by proof of a probative character."

We feel constrained to say that the Commission in this case either went outside the record and considered information or knowledge gained from experience or in other hearings in violation of the last discussed rule; or they simply ignored the substantial evidence rule and rejected the uncontradicted evidence in the record.

Sec. 65-3-11, N. M. S. A., 1953, gives the Oil Commission broad powers to make investigations, inspections, examine property, etc. We

point this out because it clearly gives the Commission the authority to conduct its own investigations and present evidence controverting an applicant's case if such evidence is available. This the Commission should do in the event there is any question about the evidence presented, and then the applicant has the right to cross-examine, explain or rebut as the rule requires.

A further error is apparent in the Commission's Order herein under our New Mexico decisions.

The New Mexico Oil Commission is a statutory agency and has only such authority as is given it by statute. Vermejo vs French, 43 N.M. 45, 85 P 2d 90; Maxwell Land Grant Co. vs Jones, 28 N.M. 427, 213 P. 1034; Transcontinental Bus System vs State Corpcration, 56 N.M. 158, 241 P 2d 829.

Sec. 65-3-14 (b), N.M.S.A., 1953, provides:

> "The Commission may establish a proration unit for each pool, such being the area that can be efficiently and economically drained and developed by one well, and in so doing the Commission shall consider the economic loss caused by the drilling of unnecessary wells, the protection of correlative rights, including those of royalty owners, the prevention of waste, the avoidance of the augmentation of risks arising from the drilling of an excessive number of wells, and the prevention of reduced recovery which might result from the drilling of too few wells."

This statute directs the Commission to "consider" the economic loss caused by the drilling of unnecessary wells" and "the avoidance of the augmentation of risks arising from the drilling of an excessive number of wells", and the "prevention of waste".

The evidence in this case was to the effect that the drilling of wells on 40 acres was unnecessary and that loss would result to the operator by drilling on 40-acre units. This evidence was substantial. There is no

evidence to the contrary. Obviously the Commission has failed to comply with the statutory mandate contained in Sec. 65-3-14. In two similar cases our New Mexico Supreme Court held that the action of an administrative tribunal in failing to comply with a similar statute was error, and its order was set aside.

In Transcontinental Bus System vs State Corporation Commission, supra, we have an appeal from a judgment of the District Court, Santa Fe County, upholding in part an order of the New Mexico State Corporation Commission, At the time of the hearing on the application before the Corporation Commission, there was pending, and undecided, another application which conflicted with the one being considered. The protestants objected to the hearing on the grounds that if the other application were granted, then the effect of this additional service on the territories should first be observed before an additional authority could be granted. This was because of a clear statutory mandate that "the Corporation Commission shall consider existing facilities in the field" before granting a certificate. The decision at Page 173 reads:

> "Under this provision of the statute the Commission has no authority to grant a certificate unless it first takes into consideration existing transportation facilities and, unless it has evidence on the existing transportation facilities, it would have no valid or legal method or right of determining whether or not the service furnished by existing transportation facilities is reasonably adequate."

And at Page 177

> "The Commission is authorized only to make its decision upon the evidence adduced at the hearing and made a part of the record. In either instance the Commission violated the statute and failed to give the appellant a fair and full hearing. The appellant was entitled to such a hearing as the statute provides. It was entitled to a hearing as provided by law, conducted fairly and impartially, with an opportunity to introduce evidence to refute or modify any matters or facts which the Commission might take into consideration in reaching its decision."

In State vs. Mt. States Tel & Tel, 54 N.M. 315, 224 P 2d 155, another order of the State Corporation Commission was being questioned. The Supreme Court pointed out that our Constitution provides that in fixing or approving telephone rates, the Corporation Commission shall give due consideration to the "earnings, investments and expenditures of the Company." It then held:

> "Unless due consideration is given to the earnings, investment and expenditures as a whole within the State in fixing values of public utility corporations' property as a basis for rate making, an order fixing or approving such rates is void."

Under these cases, the instant order is void because the Commission failed to consider the economic loss to applicant by the drilling of unnecessary wells and the risks arising to applicant by the drilling of an excessive number of wells.

Furthermore, under Section 65-3-14 (b) of our statutes, the Commission is to "prevent waste" and "protect correlative rights".

There is no question of correlative rights under the evidence and no operators or royalty owners objected to the application. There was no evidence that the granting of the application would result in waste. Mr. Lawrence testifying for applicant, stated that as much ultimate recovery of oil would be obtained by developing on 80 acres as on 40's. This evidence was uncontradicted.

Both witnesses gave it as their opinion that the granting of temporary rules would encourage the exploration and development of the field. Conversely, the denial of the application would impair or discourage this development.

We submit it constitutes waste when oil reserves and oil fields

are not developed and produced. Any order of this Commission impairing or discouraging the exploration for and development of oil and gas reserves violates the statutory mandate directing this Commission in the prevention of waste.

We likewise contend that an order which in effect requires the development of a field on a 40-acre pattern when as much ultimate recovery can be obtained by development on 80's, results in waste.

We submit the Commission was in error in failing to consider these factors as is evidenced by their denial of the instant application.

CONCLUSION

The applicant has established its case by substantial and undisputed evidence. Under the rules of evidence applicable to this case, as our Supreme Court has announced them, we are entitled to have our application granted. The Commission has summarily denied the application. This presents a problem insofar as future 80-acre spacing applications are concerned.

We would first point out that it is difficult for attorneys to advise their clients as to how to proceed in these matters because it is impossible to determine what evidence is required to sustain an application. It appears that 80-acre spacing will not be granted by this Commission regardless of the evidence presented.

If it is the position of this Commission to deny 80-acre spacing applications regardless of the evidence presented, as the Commission's action in this case indicates, then the Commission ought to say so and not put the companies to the trouble and expense of filing applications, gathering evidence and going through hearings.

We would further suggest that if the Commission is considering

evidence from other hearings or other facts not in the record when deciding these applications, they are in error and ought to present such evidence at the hearing so that the applicants will have an opportunity to explaint or rebutt such evidence.

If it is the Commission's position that applications will be granted when competent legal evidence is presented, as Commission Rule 1212 and the substantial evidence rule contemplate, then the Commission's order herein should be vacated and our application approved.

Respectfully submitted,

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By _____
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OIL CONSERVATION COMMISSION
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Supplement to Docket No. 29-59

CASE 1737: (k) Extend the Justis-Ellenburger Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 38 EAST, NMPM
Section 30: NW/4

No. 29-59

DOCKET: REGULAR HEARING AUGUST 13, 1959

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe, New Mexico

Allowable: (1) Consideration of the oil allowable for September, 1959.

(2) Consideration of the allowable production of gas for September, 1959, from six prorated pools in Lea County, New Mexico, also consideration of the allowable production of gas from seven prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico.

CASE 1668: (Rehearing)
In the matter of the rehearing requested by Phillips Petroleum Company for reconsideration by the Commission of Case No. 1668 which was an application for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool and certain adjacent acreage in Lea County, New Mexico, to provide for 80-acre proration units. The rehearing will be limited to a brief and argument on the legal propositions raised in the petition for rehearing and their application to the facts heretofore presented in said case.

NEW CASES

CASE 278: Application of Duval Sulphur and Potash Company for an extension of the Potash-Oil Area as set forth in Order R-111-A. Applicant, in the above-styled cause, seeks an order extending the Potash-Oil Area as defined in Order R-111-A, to incluse additional acreage in Townships 18, 22 and 23 South, Range 30 East, Eddy County, New Mexico.

CASE 278: Application of United States Borax & Chemical Corporation for an extension of the potash-oil area as defined in Order No. R-111-A. Applicant, in the above-styled cause, seeks an extension of the potash-oil area as defined in Order No. R-111-A to include additional acreage in Townships 21 and 22 South, Ranges 29 and 30 East, NMPM, Eddy County, New Mexico.

CASE 1735: Application of The Ohio Oil Company for an order promulgating special rules and regulations for the Bluitt-Pennsylvanian Pool in Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating special rules and regulations governing the drilling, spacing and production of wells in the Bluitt-Pennsylvanian Pool in Roosevelt County, New Mexico, including the establishment of 80-acre spacing for wells in said pool. Applicant further seeks an exception from the proposed spacing requirements for a well to be drilled in the NE/4 of Section 20, Township 8 South, Range 37 East.

CASE 1736: Application of Texas Crude Oil Company for 80-acre spacing for its State H N Well No. 1, producing from an undesignated Atoka pool and located 660 feet from the South line and 1982 feet from the West line of Section 16, Township 11 South, Range 33 East, Lea County, New Mexico.

CASE 1737: Southeastern New Mexico nomenclature case calling for an order creating and extending existing pools in Eddy and Lea Counties, New Mexico.

(a) Create a new oil pool for San Andres production, designated as the Eagle Creek-San Andres Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM
Section 14: SE/4

(b) Create a new oil pool for San Andres production, designated as the Jenkins-San Andres Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
Section 30: SE/4

(c) Create a new oil pool for Yates production, designated as the Maljamar-Yates Pool, and described as:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 5: NE/4

(d) Create a new oil pool for Paddock production, designated as the North Paddock Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 2: Lots 1-2-7-8

(e) Create a new oil pool for Tansill production, designated as the Parallel-Tansill Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 31 EAST, NMPM
Section 25: NW/4

(f) Extend the Crosby-Devonian Gas Pool to include therein:

TOWNSHIP 26 SOUTH, RANGE 37 EAST, NMPM
Section 4: NW/4

(g) Extend the Empire-Abo Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 3: NW/4

(h) Extend the West Henshaw-Grayburg Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 30 EAST, NMPM
Section 2: Lots 11-12-13-14

(i) Extend the High Lonesome Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 29 EAST, NMPM
Section 13: NE/4 & SW/4
Section 14: SE/4
Section 15: SE/4

(j) Extend the Justis Blinebry Pool to include therein:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 24: SW/4

(l) Extend the Justis McKee Pool to include therein:

TOWNSHIP 25 SOUTH, RANGE 38 EAST, NMPM
Section 30: NW/4

(m) Extend the Langlie Mattix Pool to include therein:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM
Section 22: SW/4

(n) Extend the East Millman-Queen-Grayburg Pool to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 11: SE/4
Section 15: SE/4

(o) Extend the Pearl-Queen Pool to include therein:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM
Section 34: NW/4

(p) Extend the North Red Lake Queen Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
Section 34: NW/4

(q) Extend the Shugart Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 34: NW/4

(r) Extend the Sawyer-San Andres Pool to include:

TOWNSHIP 9 SOUTH, RANGE 38 EAST
Sections 20, 21, 28, and 29: All

Contract the South Sawyer-San Andres Pool to delete:

TOWNSHIP 9 SOUTH, RANGE 38 EAST
Section 28: SW/4 SW/4

CASE 1738: Northwestern New Mexico nomenclature case calling for an order extending existing pools in San Juan and Rio Arriba Counties, New Mexico.

(a) Extend the West Kutz-Fruitland Pool to include therein:

TOWNSHIP 29 NORTH, RANGE 12 WEST, NMPM
Section 18: SW/4

(b) Extend the Aztec-Pictured Cliffs Pool to include therein:

TOWNSHIP 28 NORTH, RANGE 10 WEST, NMPM
Section 13: SW/4
Section 24: N/2

(c) Extend the South Blanco-Pictured Cliffs Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 2 WEST, NMPM
Section 28: N/2

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM
Section 29: S/2

TOWNSHIP 27 NORTH, RANGE 6 WEST, NMPM
Section 2: N/2

(d) Extend the Tapacito-Pictured Cliffs Pool to include therein:

TOWNSHIP 25 NORTH, RANGE 3 WEST, NMPM
Section 15: SW/4

(e) Extend the Otero-Chacra Pool to include therein:

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM
Section 29: E/2

(f) Extend the Bisti-Lower Gallup Oil Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 9 WEST, NMPM
Section 6: S/2

TOWNSHIP 24 NORTH, RANGE 10 WEST, NMPM
Section 1: SE/4

(g) Extend the Escrito-Gallup Oil Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 7 WEST, NMPM
Section 19: NE/4 NE/4
Section 20: N/2
Section 21: N/2 & SE/4

(h) Extend the Gallegos-Gallup Oil Pool to include therein:

TOWNSHIP 26 NORTH, RANGE 11 WEST, NMPM
Section 14: All
Section 15: All
Section 16: E/2
Section 22: N/2
Section 23: N/2 & SE/4
Section 26: NE/4

(i) Extend the Horseshoe-Gallup Oil Pool to include therein:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM
Section 5: W/2 & SE/4
Section 9: E/2 SE/4
Section 11: N/2 SE/4 & SE/4 SE/4
Section 13: W/2 NW/4 & NW/4 SW/4

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM
Section 20: SW/4 SE/4
Section 34: NW/4 NW/4

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
Section 25: NE/4 NW/4 & N/2 SE/4

(j) Extend the Otero-Gallup Oil Pool to include therein:

TOWNSHIP 24 NORTH, RANGE 6 WEST, NMPM
Section 2: NE/4

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM
Section 27: NW/4 & N/2 SW/4

TOWNSHIP 25 NORTH, RANGE 6 WEST, NMPM
Section 35: E/2
Section 36: All

CASE 1749:

In the matter concerning purchaser prorationing by Indiana Oil Purchasing Company in certain oil pools in Lea County, New Mexico, which prorationing is necessitated by refinery strikes.

pj/

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

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

CASE NO. 1668
Order No. R-1418

APPLICATION OF PHILLIPS
PETROLEUM COMPANY FOR
AN ORDER ESTABLISHING
TEMPORARY SPECIAL RULES
AND REGULATIONS FOR THE
RANGER LAKE-PENNSYLVANIAN
POOL, LEA COUNTY, NEW
MEXICO, TO PROVIDE FOR
80-ACRE PRORATION UNITS

APPLICATION FOR REHEARING

Comes now Phillips Petroleum Company, Applicant herein, and shows that on June 5, 1959, the Oil Conservation Commission entered its Order in the above styled case after due notice and hearing held on May 13, 1959, which said Order denied the Application heretofore filed for an order establishing temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, to provide for 80 acre proration units.

The Applicant believes said Order and decision to be erroneous in the following respects, to-wit:

I. That under Rule 1212 of the Commission's Rules and Regulation, being entitled "Rules of Evidence", it is provided among other things that the Rules of Evidence applicable in a trial before a Court without a jury shall apply to Commission

Received 1-31-59

hearings; that "No order shall be made which is not supported by competent legal evidence"; that our New Mexico Supreme Court in various decisions has established the following rules of evidence as being applicable to trial before a court without a jury and to hearings by administrative tribunals, to-wit:

a. Findings of fact can not be based upon surmise, speculation or conjecture;

b. Before a finding of fact will be sustained, there must be some evidence in the record of a tangible nature to support such finding;

c. A Court may not arbitrarily reject uncontradicted testimony or evidence;

d. Rules relating to weight, applicability or materiality of evidence may not be limited or relaxed by an administrative tribunal.

e. A finding of fact which is not supported by evidence of a probitive character is arbitrary and can not be sustained.

f. An order of an administrative body which is not based upon substantial evidence may properly be described as conjectural, speculative, unlawful, unreasonable, arbitrary and capricious and can not be sustained.

2. That the Order heretofore entered was not supported by competent legal evidence and was otherwise issued in violation of the above described rules, in this:

a. The uncontradicted testimony and evidence in the record established that one well would efficiently and economically drain in excess of 80 acres in the Ranger Lake-Pennsylvanian Pool. This evidence was substantial. There was no competent legal evidence to the contrary.

The Commission erred in arbitrarily rejecting this uncontradicted testimony and in making their Finding of Fact No. 3.

b. The uncontradicted testimony and evidence established that it would be uneconomic and unnecessary to drill wells on 40 acre proration units in the Ranger Lake-Pennsylvanian Pool.

It was further established that with temporary 80 acre spacing, the exploration and development of the Field would be enhanced and encouraged; that if closer spacing was later indicated additional wells could be drilled, but that unnecessary and wasteful wells (in this Pool costing $200,000.00) could never be "undrilled".

The Commission erred in arbitrarily rejecting this uncontradicted evidence and making their Finding of Fact No. 4.

3. That the Commission's Order and Finding of Fact No. 4 thereof was made and entered in violation of Sec. 65-3-14(b), N.M.S.A., 1953, in that the Commission failed to consider the economic loss to Applicant caused by the drilling of unnecessary wells, which said economic loss was established by the uncontradicted evidence in the record.

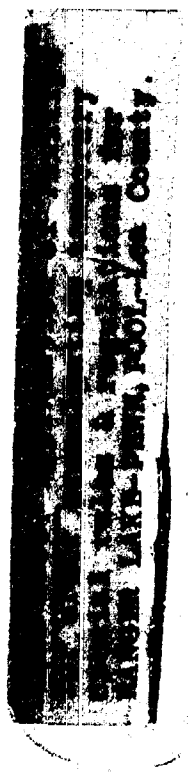
4. Applicant shows that no adverse party entered an appearance herein (except Gordon M. Cone who later withdrew objection and consented to the application) and therefore service of this Application for Rehearing under Rule 1208 is not required.

WHEREFORE Applicant requests a rehearing be granted so that Applicant may submit a brief and argument on the legal propositions herein set forth and their application to the facts, and that thereafter the Commission enter its order granting the application.

CARL W. JONES
P. O. Box 791, Midland, Texas

GRANTHAM, SPANN AND SANCHEZ
904 Simms Building, Albuquerque, N.M.

By: _____
Attorneys for Applicant
Phillips Petroleum Company



SW/4 SW/4 Sec. 34

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 17, 1960

REGULAR HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for an order promulgating special rules and regulations governing the drilling, spacing, and production of wells in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units for wells in said pool. CASE 1668

BEFORE:

Mr. Murray Morgan
Governor John Burroughs

TRANSCRIPT OF HEARING

MR. PAYNE: We will proceed to Case 1668, which is an application by Phillips Petroleum Company for an order promulgating special rules and regulations governing the drilling, spacing, and production of wells in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units for wells in said pool.

At this time I would like to call for appearances in the case.

MR. SPANN: Charles C. Spann of Grantham, Spann and Sanchez, 904 Simms Building, Albuquerque, New Mexico, representing the Applicant, Phillips Petroleum Company; and I have associated with me Mr. Carl Jones of Midland, also with Phillips Petroleum

Company, who will conduct the questioning in the cases.

We have two witnesses in support of the application.

This is a hearing to have some temporary rules made permanent and we did have a hearing on the temporary rules, I assume that the record in that hearing, since this is the same case, will be considered by the Commission in connection with the determination of whether permanent rules should be promulgated.

MR. PAYNE: That's right, Mr. Spann, that record will be a part of this case.

MR. SPANN: Thank you.

MR. JONES: If it please the Commission, our first witness will be Carl F. Lawrence.

MR. PAYNE: Let's swear both witnesses in at the same time.

(Witnesses sworn.)

MR. SPANN: For the record, I would also like to introduce Mr. R. M. Williams, also of Phillips, an attorney from Bartlesville, and enter his appearance.

(Whereupon, Applicant's Exhibits 1 through 5 marked for identification.)

CARL F. LAWRENCE

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

DIRECT EXAMINATION

BY MR. JONES:

Q Will you state your name for the record, please?

A Carl F. Lawrence.

Q Where do you live, Mr. Lawrence?

A Bartlesville, Oklahoma.

Q You are employed by Phillips Petroleum Company?

A Yes, sir.

Q In what capacity?

A Regional Southwest Development Geologist.

Q In that capacity, have you had occasion to study the Ranger Lake-Pennsylvanian Pool in Lea County?

A Yes, sir, I have.

Q As a matter of fact, Mr. Lawrence, did you not testify at the last two hearings on this field, one on February 19, 1959, and the other on May 13, 1959?

A Yes, sir, I did.

MR. JONES: Any questions about his qualifications?

MR. PAYNE: No, sir.

Q (By Mr. Jones) Mr. Lawrence, have you had occasion to make a further study of the Ranger Lake Pool since the last hearing of May 13, 1959?

A Yes, I have.

Q In connection with that study, have you prepared certain exhibits?

A Yes, sir.

Q And on the board is what is marked Exhibit No. 1, and

will you explain to the Commission what that is, please?

A Exhibit No. 1 is an east-west cross section across the Ranger Lake Field, going in an east-westerly direction. It starts in the west with the Tidewater No. 1 "K" State, located in the Northeast of the Northeast of Section 27, east of the Phillips No. 10 Ranger; further east, the Phillips No. 5 Ranger; and then terminating in the east with the Phillips No. 2 Ranger located in the Northwest Northwest of Section 23.

On the cross section the top upper red shaded line is the top of the Ranger Lake pay zone. The lower wavy line shaded by blue is the original oil-water contact. The various logs run on the well are indicated on this cross section showing the completion interval by perforations, as well as the initial flowing or pumping potential, along with the completion data of each well.

Q All right, Mr. Lawrence, what do you show the oil-water contact to be?

A Minus 6211.

Q Anything further from that exhibit?

A The cross section itself shows the continuity of the pay horizon, showing the common reservoir of each of the wells.

Q All right. Have you also prepared a north-south cross section of this reservoir?

A Yes, sir, I have.

Q Is that marked Applicant's Exhibit 2?

A Yes, sir.

Q Now on the north-south cross section, the Phillips Exhibit 2, I believe you also have a structure map of this reservoir, do you not?

A Yes, sir.

Q Proceed.

A The cross section No. 2 is a north-south cross section extending in a north-south direction through the center of the field. It starts in the north part of the field with the Phillips No. 4 Ranger located in the Southeast of the Northwest of Section 23. It progresses south to the Phillips No. 6 Ranger to the Number 11 Ranger to the No. 12 Ranger, and then terminates in the south with the Amerada well located in the Northwest Northwest of 35.

This cross section shows the structural relationship, as well as the continuity of the pay horizon throughout the field, and shows it on a north-south plane.

Once again the red line indicates the top of the Ranger Lake pay zone; the blue line, the lower blue line indicates the oil-water contact at minus 6211. On this cross section we've also shown a structural map contoured on top of the Ranger Lake pay zone. This is contoured on a 50-foot interval and shows the structural relationship of the field.

Q To date how many wells have been drilled in this reservoir, Mr. Lawrence?

A To date there has been a total of nineteen wells drilled since the last hearing. It makes a grand total -- there has been

a total of twenty-six wells drilled to the Ranger Lake pay zone. Of those twenty-six, there's been four dry holes and twenty-two producers. To date there are twenty-two producers in the field.

At the time of the last hearing there were seven wells drilled to the reservoir, consisting of six producers and one dry hole. So in the fifteen months since the past hearing, or since the May hearing, there were a total of nineteen wells drilled to the reservoir.

Q Of those wells which are presently producing in the reservoir, how many are owned or operated by Phillips Petroleum Company?

A Phillips operates eleven producers.

Q Mr. Lawrence, I believe the record of the prior hearing will show that it was estimated that twelve to fourteen wells would be drilled within the next year following the date of that testimony; and now you have testified that nineteen wells have been completed since that time?

A Yes, sir. Nineteen wells have been drilled. There were sixteen completed as producers.

Q Yes. In your opinion does that indicate to you that the temporary rules which have been in effect during that year have encouraged drilling, as you testified in your opinion would be the case at the last hearing?

A Yes, sir, definitely.

Q All right, now, have the wells drilled to the Pennsylvanian

reservoir in this field to date defined the limits of the field, in your opinion?

A Yes, in some areas; there are two areas which the field is not definitely delineated as yet. The first area is in the Northeast portion of the field, primarily the Northeast Quarter of Section 23, and in the Southwesterly portion of the field; namely the Southwest Quarter of Section 34. I don't feel that those limits in those particular areas are definitely delineated at this date.

We have the field limit in an east-west direction, dry holes and a pinchout of the pay. However, in the Southwesterly portion and the Northeasterly portion, I don't feel that the field is quite yet defined.

Q Will you proceed to your next exhibit, Mr. Lawrence? What is the exhibit which has been marked as Exhibit 3?

A Phillips Exhibit No. 3 is an isopaque map contoured on the net pay encountered in each of the various wells drilled in the Ranger Lake field.

We have made this isopaque on an acetate overlay so we could lay it over the structural map to see any relationship there may be or if there is a relationship between net pay and structural position?

A It's a convenient method of portraying that type of relationship and we feel that there is some relationship between net pay and structural position.

Q And is that indicated in your opinion by the overlay?

A Yes, sir, it is.

Q Have you also prepared a larger isopaque map of net pay thickness?

A Yes, sir, we have just a regular isopaque map constructed on these net pays, and it's basically the same map as the overlay, except it is on a different type of paper. That is Phillips Exhibit No. 4.

Q Do you have a further exhibit, Mr. Lawrence?

A Yes, sir. In front of the brochure there is a little regional map showing the geological location as well as the geographic location of the Ranger Lake Field. It shows the Ranger Lake Field to be on the southeast flank of the northern shelf, or on the northwest portion of the Chaves-Lea Basin.

Q From your study of this field, is it still your opinion, as it was at the time of the prior hearing, that this reservoir, that the wells in this reservoir are in communication with each other and it does constitute a common source of supply?

A Yes, sir.

Q Have you formed an opinion from your study of the field, from a geological standpoint, that the characteristics of this field are such that one well will drain 80 acres in the field?

A Yes, I definitely feel that one well will drain 80 acres.

Q Have you studied and prepared data as to the cost of drilling a well in this field?

A Yes, sir, I have.

Q Will you give the Commission those figures, please?

A We have prepared an economic analysis, assuming a 100 percent working interest on drilling a 10,400 foot development well in the Ranger Lake Field. We compared it using 80-acre reserves as compared against 40-acre reserves.

At the previous hearing we have used as an exhibit a similar economic analysis, and I will compare the analysis at that time to our current analysis.

At the May hearing we had an 80-acre unit ultimate average primary recovery of 210,000 barrels of oil. With the additional reservoir information that we have gathered from the wells in the Field, the additional productive history that we have been able to attain on these wells, we were forced to reduce the reserve to 175,000 barrels per well.

Our initial investment for drilling a development well at the May hearing was $200,000.00. By using a different casing string, we were able to reduce that cost to $196,000.00.

MR. NUTTER: How much is that?

A $196,000.00.

MR. NUTTER: Thank you.

A Our net reserve, in other words, after we take the override out, at the May hearing was 173,700 barrels of oil. Our net reserves now, based on the new ultimate recovery, is 131,000 barrels of oil. The value of that oil is $392,000.00 under our new analysis, as compared against $475,913.00 at the May hearing.

The investment plus the lease operating and overhead costs at the May hearing was $244,000.00. Our current investment and lease operating costs are now $240,000.00. So our profit before tax then is $152,000.00. At the May hearing we reported the profit only before tax. We have since worked it out and had it worked out after taxes, the income tax and various taxes on that amount of money would be $21,000.00, leaving an ultimate profit after taxes to the operator of $123.900.00. That's an investment -- in other words, our investment then is returning 1.6 times.

Our wells now would pay out in twenty-one months at 143 barrels of oil per day, yielding the operator an annual rate of return of twenty-nine percent. That compares with the May hearing where wells paid out in eighteen months at 163 barrels of oil per day. We have had to reduce -- or increase the payout time because the wells would not make that much oil per day, so we've lengthened our payout time some three months to twenty-one months.

In comparing that against 40-acre development, our initial investment at the May hearing, again, was $200,000.00, and our initial investment on 40-acre development would still be the same, $196,000.00. Our gross reserves, however, would be cut in half. Our gross reserves at the May hearing was $145,000.00. Now our gross reserves will only be $75,000.00.

Our net reserves would be 65,500 barrels of oil, that's after we take our override out. The value of that oil is $196,000.00, less our investment and lease operating expenses of $240,000.00 gives

the operator a loss of $44,000.00.

So comparing those two, I feel that it's clear that 40-acre development is just not feasible; that with 40-acre development operators could not afford to drill wells, and I think the productive history that we've seen on the wells substantiates this analysis.

Q (By Mr. Jones) Mr. Lawrence, those figures, of course, are based on what you conceive to be an average well in the Field, are they not?

A Yes, sir, that is correct.

Q They are strictly the cost of drilling an average well?

A Yes, sir.

Q Those figures, I understand, do not include any portion of lease acquisition costs?

A That's right.

Q Or any charges for dry holes which might be drilled?

A That is correct.

Q It's your opinion, then, I believe you stated, that it's not economically feasible to drill wells in this field on 40 acres?

A That is correct.

Q Is it your opinion that to require development on 40 acres would result in the drilling of unnecessary wells in this Field?

A Yes, sir, it would.

MR. JONES: That concludes the direct testimony of this witness, and may it please the Commission, we move the admission of Phillips' Exhibits 1 through 5, inclusive.

MR. PAYNE: Phillips' Exhibits 1 through 5 will be admitted. Does anyone have a question? Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lawrence, I believe at the last hearing some data was submitted regarding permeability and so forth of this reservoir. Do you have any new data on that aspect of it?

A No, sir, we did not core additional wells in the Field. We felt the core taken on Ranger Lake No. 2 was sufficient.

Q Have any interference tests or bottom hole pressure tests been run in this Field?

A I believe our engineering witness will have information on that.

Q How about production decline curves on the wells? Will he also have information on that?

A Yes, sir.

MR. NUTTER: I believe that's all. Thank you.

MR. PAYNE: Anyone else have a question of the witness?

BY MR. PAYNE:

Q Mr. Lawrence, what is the drive mechanism in this pool?

A Solution gas.

Q Does Phillips anticipate this pool will be waterflooded

in the future?

A My own personal opinion on that is that it probably will be in the future, yes, sir.

Q From a geological standpoint, would you expect to get more, less, or the same amount of oil on secondary recovery, whether this pool is drilled up on 40 or 80 acres?

A I believe our engineering witness will have information in regard to the secondary recovery aspects of the Field.

Q Does Phillips have any undrilled acreage left in what you consider the productive limits of the pool?

A Yes, sir. We feel that we have probably two additional locations left in the Field; one to the south in the Southeast of the Northwest of Section 34, or somewhere in the 80-acre tract; and also we feel we have productive acreage in the Northeast Quarter of Section 23.

Q Now, if my memory serves me correctly, this pool is the one that has one well in it that has 40 acres dedicated to it with a so-called special allowable?

A Yes, sir.

Q It's the recommendation of Phillips that the rules enacted on a temporary basis be made permanent, including a provision relative to that well?

A Yes, sir, I believe it is.

Q And all of your wells are no longer top allowable wells?

A That's correct, yes. We have, I believe, one or two

there that are still top allowable, but that's all.

MR. PAYNE: Any further questions of the witness? He may be excused.

(Witness excused.)

MR. JONES:: Our next witness will be Mr. W. R. Bohon.

W. R. BOHON

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

DIRECT EXAMINATION

BY MR. JONES:

Q Will you state your name for the record, please?

A W. R. Bohon, B-o-h-o-n.

Q Where do you live, Mr. Bohon?

A I live in Bartlesville, Oklahoma.

Q You are employed by Phillips Petroleum Company?

A Yes, sir.

Q In what capacity?

A I'm the supervising area petroleum engineer for the Western Area, that encompasses Southeastern New Mexico and the Permian Basin Area of West Texas.

Q In such capacity do you have supervision of and have you made a study of the Ranger Lake-Pennsylvanian Pool in Lea County?

A Yes, sir, I have.

Q You testified, I believe, at the first hearing on this Field on February the 19th, 1959?

A That's correct.

MR. JONES: Any questions about his qualifications?

MR. PAYNE: No, sir, they are acceptable.

Q (By Mr. Jones) You did not testify at the last hearing on this Field on May the 13th, 1959?

A No, I did not.

Q Who did present the hearing testimony on that occasion?

A Mr. B. W. Berthelot, who at that time was our Division Engineer assigned to Midland, Texas.

Q Have you read the transcript of that hearing and Mr. Berthelot's testimony at the prior hearing?

A Yes, sir.

Q Are you in general agreement with the factual data which was presented by him?

A Yes.

Q Have you made a continued study of the Ranger Lake-Pennsylvanian Pool since the date of the last hearing?

A Yes, sir.

Q Have you prepared certain exhibits and data in connection with the Field and its performance since May 13, 1969?

A I have.

(Whereupon, Phillips' Exhibits 6 through 12 marked for identification.)

Q Will you proceed?

A I have prepared a brochure which was passed out; the first page or the first exhibit, which I assume will be Phillips

Exhibit No. 6, is essentially the same that was submitted at the previous hearings, but has been brought up to date and changed where necessary. I'll limit my comments to new data and to changes over that which was presented at previous hearings.

Under Item No. 1-A, which is the average, approximate average porosity, this has been reduced to 6.7 percent from 8.7 percent which was shown on the exhibit at the previous hearing. This reduction was necessitated by the additional information obtained by drilling the nineteen wells referred to by Mr. Lawrence. The information is the same as shown on the original exhibit until we get down to the statistical data, Item No. 5; this data was taken from the New Mexico Oil and Gas Engineering Report. There is a correction that needs to be made on this particular exhibit. There are actually twenty-one producing wells in the Ranger Lake-Pennsylvanian Field as of 6-1-60. The reason for the exhibit showing only twenty was that one of the wells, the American Trading well, was carried in the New Mexico Oil and Gas Engineering Report under an undesignated classification rather than in the Ranger Lake-Pennsylvanian Pool. The inclusion of that well would also necessitate the changing of the accumulated production. It should be for the oil 1,239,486 barrels. The water production should be changed to 23,162 barrels.

Under the General Reservoir Mechanics, we have of course additional history on this Field. This history indicates that this reservoir is now operating under a solution gas drive mechanism and

will operate under a solution gas drive mechanism until depletion. We have no evidence to date of a water drive.

The next exhibit is a tabulation of the production data for the Ranger Lake-Pennsylvanian Pool. As I said, this information was taken from the New Mexico Oil and Gas Engineering Report. This information that's tabulated is also shown graphically on the following exhibit, which will be Phillips Exhibit No. 8. I think it will be easier for us to see the performance of this Field from this graphical presentation, rather than from the tabulation.

At the time of the last hearing, there were six wells completed in the Field. The information that I have tabulated and plotted here runs to June 1st, 1960, at which time there were twenty-one producing wells in the Ranger Lake-Pennsylvanian Pool. At the time of the last hearing, the Field gas-oil ratios was approximately 650 cubic feet per barrel. It has increased to approximately 1350 cubic feet per barrel. The monthly oil production at the time of the last hearing was in the order of 25,000 barrels per month. Currently it is approximately 67,000 barrels per month. This production of 67,000 barrels a month, incidentally, would compare to a top allowable for all of the wells in the Field of something in excess of 120,000 barrels per month. The wells are actually producing about half of what the top allowable for this depth well on 80-acre spacing would be, if they were capable of making it.

The next exhibit is a tabulation of the bottom hole pressure data available in the Field. This is marked Exhibit 9 and

is an exhibit that has been brought up to date from the previous hearings. The bottom hole pressures are tabulated under each well, showing the date, the hour shut in, and the bottom hole pressure at the reservoir datum of minus 6,050 feet. Again the following exhibit is a graphical presentation of the tabulation shown on Exhibit No. 9, I believe; Exhibit No. 10 then being the graphical presentation of the bottom hole pressures by wells plotted versus time.

At the time of the last hearing, the initial pressure on the Phillips Ranger No. 6 had been presented; thus all of the bottom hole pressure information subsequent to May, 1959, is new bottom hole pressure information. It is pertinent to observe that the wells closer to the older area of development are,generally speaking, coming in with lower initial bottom hole pressures. These pressures are following fairly rapidly to the order of magnitude of the pressures encountered in the older wells. Wells further removed from the area of older development are coming in with higher initial bottom hole pressures, and they aren't declining as rapidly. This is exactly what you would expect in a field of this configuration and with this development that has been experienced.

Exhibit No. 11 is a tabulation of the initial bottom hole pressures measured in the wells completed. Opposite the pressure spot on this exhibit is the name of the well the pressure was measured in, and immediately below that is the date of the pressure measurement, and in parenthesis following that is the date that the well

was completed. The red line running across the top of this exhibit is the estimated original bottom hole pressure. It is pertinent to note in this exhibit that all of the wells completed since the last hearing, and those are all of the wells since the Phillips Ranger No. 6, show a considerable pressure decline from the original reservoir pressure. The maximum initial reservoir pressure measured was 2,903 pounds. This pressure is still some 707 pounds below the original reservoir pressure of 3,620.

Now this pressure was measured in the Pan American State A.S. Weil No. 1, which if you will refer to a map you will see is on the farthest side of the Field from the area of the older development. I think this is conclusive proof that we have experienced communication and drainage over rather large areas, considerably larger than what we are asking for here in 80-acre spacing.

The next exhibit is again a plot of bottom hole pressures versus the cumulative production on the Phillips Ranger Lease. This is an up to date exhibit of one presented by Mr. Berthelot at the previous hearing. I think that the additional data that has been obtained has corroborated our contention that drainage is occurring and that a well will efficiently drain on 80-acre spacing.

Q All right, Mr. Bohon, you heard Mr. Lawrence's testimony as to the cost of drilling and the anticipated recoveries and profit to be expected from wells on 80-acre spacing and 40-acre spacing. Are you in general agreement with those figures?

A Yes, sir, I am.

Q Do you have anything to add to Mr. Lawrence's testimony in that regard?

A No, I do not think that a well can be drilled from an economic standpoint on 40-acre spacing. As pointed out by Mr. Lawrence, these costs on the average well do not include leasehold acquisition cost, do not include a pro rata share of the dry holes that have been drilled in this area; and the data presented actually would be an optimistic picture.

Q It is your opinion then that this Field and reservoir can be efficiently and economically drained on 80-acre proration units?

A Yes, sir.

Q Will you express briefly the reasons shown in that brochure showing the communication which warrants the development on 80-acre proration units?

A I think the most significant exhibit that we have in point is the fact that all of these wells that have been completed recently have come in with initial reservoir pressures considerably below the original reservoir pressure, concrete evidence that drainage has occurred, considerable drainage, and over rather long distances. To my knowledge there is no better proof of drainage than this.

Q Is it your opinion that to require development of this reservoir on 40-acre proration units might cause the drilling of unnecessary wells?

A Yes, sir, I think that it would.

Q Is it your opinion that to require development of this reservoir on 40-acre proration units might impede further development in the pool?

A Yes, sir, I do.

Q By the way, Mr. Bohon, what is the stage of depletion, in your estimate, of this reservoir?

A I would estimate the stage of depletion of this reservoir from a third to a half.

Q At the date of the last hearing there was no market for gas from this Field. Is there now a market and is gas being sold from the Field?

A Yes, sir, there is. I believe the casinghead gas is being sold to Warren Petroleum Company. I know on Phillips Lease we started selling gas in June of 1959.

Q You heard Mr. Lawrence's testimony that nineteen wells have been completed in this pool since the date of the last hearing, as contrasted with an estimate of twelve to fourteen wells which it was then thought would be drilled during the following year. Does that indicate in your opinion that the temporary rules have encouraged the development of this pool?

A Yes, sir, it does.

Q The application which is the subject of this hearing is that the temporary rules now in effect for the pool be made permanent. Will you express briefly for the Commission the temporary

rules which are now in effect and which this application requests be made permanent?

A Well, very briefly, the rules now in effect require 80-acre spacing and 80-acre proration units, with the wells to be located within 150 feet of the center of either the Northwest Quarter or the Southeast Quarter Section of a governmental Quarter Section.

Q One moment, if you please. I believe they specify 80-acre proration units, but it does not specify 80-acre spacing. An operator may, if he chooses, can drill more than one well on an 80-acre unit, but would receive only the 80-acre allowable. Is that now the effect of the order as it now reads?

A That is correct. I beg your pardon.

Q If you will continue, please.

A Basically, that comprises the temporary rules now in effect.

Q Now the order also assigns to the, permits the Gordon Cone well, which is on a 40-acre tract, an 80-acre allowable, and it is the position of the applicant, Phillips Petroleum Company, at this hearing that insofar as the applicant is concerned, that well may continue to receive an 80-acre allowable?

MR. PAYNE: I don't believe that's correct, a 40-acre allowable.

Q (By Mr. Jones) 40-acre allowable?

A Yes, sir.

MR. JONES: If it please the Commission, that concludes

the direct testimony of this witness, and the applicant moves the admission of Exhibits 6 through 12 inclusive.

MR. PAYNE: Were these exhibits prepared by Mr. Bohon or under his supervision?

A Yes, sir.

MR. PAYNE: They will be admitted. Does anyone have a question? Governor.

CROSS EXAMINATION

BY GOVERNOR BURROUGHS:

Q You give the cost of a completed well as $196,000.00?

A That's correct.

Q What would be the approximate cost of a dry hole, a well not completed?

A Governor, I do not have those figures with me.

Q You don't have an approximate idea what it might be?

A It would depend on whether or not you basically set your casing string to test it before you abandoned it as a dry hole. In, I know in No. 8, which was a dry hole, the cost of that well was considerably in excess of a producer, because we attempted to make a completion out of it and were unable to, and the cost did exceed the cost of a normal completion.

MR. PAYNE: Mr. Nutter.

BY MR. NUTTER:

Q Mr. Bohon, this last page in this brochure of yours shows plots of twelve Phillips Ranger wells, and the curve seems to

be bottom hole pressure versus cumulative oil production. Is this the total production from each of these wells at the time this bottom hole pressure was taken?

A No, sir, this is not. This has been plotted, the cumulative production from the lease.

Q From which -- oh, this is from the lease?

A Yes.

Q What is the lease, the Ranger Lake Unit?

A Yes.

Q That's most of the pool, then?

A Yes. At the time that Mr. Berthelot made this exhibit it was essentially all of the pool. With the additional development that has been experienced in this Field, why, it of course no longer comprises such a large portion of the Field; and of course, the additional development and production from these other wells would tend to make this particular exhibit at this time not as significant as it was at the time Mr. Berthelot was testifying from it.

Q What was the cumulative production when Mr. Berthelot was testifying; in other words, where on this curve would it have been?

A Well, the No. 6 well, which would be approximately, oh, 450,000 barrels of oil produced.

Q I see. We don't have any curves that show the decline of the pressure in the wells versus the cumulative production as far as individual wells is concerned, do we?

A No, sir, I have not prepared those.

Q What is the maximum amount of oil that any well has produced?

A That will take me just a minute. The maximum amount of oil was produced by the Phillips Ranger No. 1, the initial completion in the Field, and as of June 1st, 1960, the accumulated production to that well was 220,853 barrels. That well, of course, has had the advantage of draining a large area and was, of course, the first completion in this Field.

Q Do you think that this pressure decline that was encountered down here on Pan American's lease when these wells were completed resulted from some oil having migrated from their well up to the Ranger No. 1 Well?

A To that general area, yes, sir.

Q So these later wells wouldn't make as much recovery as the older wells in the pool, then?

A No, sir.

MR. NUTTER: I believe that's all.

MR. PAYNE: Anyone else have a question of Mr. Bohon?

BY MR. PAYNE:

Q Mr. Bohon, have you made a general comparison of this pool with the Allison-Pennsylvanian and the Bluett-Pennsylvanian Pool?

A No, sir, I haven't.

Q You are not familiar with the range of porosity and

permeability?

A I am not familiar with those fields.

Q This pool has been developed on a fixed spacing pattern?

A Yes.

Q Has the subsequent development of the pool made you feel that the diagonal pattern as required by the rules is correct?

A The purpose of a fixed location is for uniform development in a field, but admittedly, as you get to the edges of the field, this fixed location does work hardships on certain operators. This is a rather narrow field. We have lived within the fixed location, Phillips has lived within the fixed location and have developed their properties along that line. I would have no objection to its removal.

Q Do you feel that flexible well location patterns on oblong units results in approximately the same amount of oil recovery as a fixed pattern?

A Yes, sir.

Q Inasmuch as when you get to the edge you may have some wells that are not drilled on a fixed pattern?

A That's true.

Q Do you believe that there will be substantially the same amount of oil recovery from this pool if it's developed on 80-acre proration units?

A As opposed to 40?

Q Yes, sir.

A Yes, sir, I definitely do.

Q If Phillips waterflooded this pool, would you recommend to your management that it drill infill wells?

A Not necessarily. The experience and the pressure history to date would indicate that infill wells would not be needed.

Q In other words, you believe you would get the same amount of recovery on secondary whether this pool is developed on 40's or 80's, substantially the same amount?

A Yes, sir. Further, if you were to require the indiscriminate drilling of 40-acre locations, not indiscriminate, but the drilling of 40-acre locations, you would have to drill 40-acre locations along the perimeter of the field, too, and I think they would be useless to you in a secondary recovery project, unless you were going into a pattern type flood.

Q Of course, that might indicate then, might it not, that on primary on these edge wells, you are dedicating 80 acres but only 40 acres are productive?

A No, I did not mean to say that. I don't believe I said it. What I meant to say was that if you were, if additional wells are needed in a secondary recovery prospect or project, the specific location should be left to the operators of that waterflood and not just say, "We're going to drill all 40-acre locations," because first of all, it's not economic to drill 40-acre locations, and secondly, you would drill a lot of unnecessary wells, a lot of wells that wouldn't be useful even in a secondary recovery project. At the present time there is no indication that we will need to drill

infill wells.

MR. PAYNE: Thank you. Any further questions of the witness? If not, he may be excused.

(Witness excused.)

MR. PAYNE: Do you have anything further, Mr. Jones?

MR. JONES: Yes, sir. I offer as Phillips Exhibit 13 a letter from Amerada Petroleum Corporation stating that Amerada will appear at the hearing and make a statement in support of this application.

I offer as Phillips Exhibit 14 a letter from Joseph I. O'Neill, Jr., stating that they agree that this Field should continue to be developed on 80-acre proration units. The letter, however, further states that this operator believes that the rigid spacing requirements should be eliminated from the rules.

Offer as Exhibit 15 a letter from Pan American Petroleum Corporation stating: "We plan to have a representative present at the hearing to make a statement in support of your application for permanent 80-acre spacing."

I offer as Phillips Exhibit 16 a letter from Mobil Oil Company stating that they were included on the mailing list by mistake and have no interest in this pool.

(Whereupon, Phillips' Exhibits 13 through 16 marked for identification.)

MR. JONES: If it please the Commission, that concludes our testimony.

MR. PAYNE: Anyone desire to present any further testimony? Anyone desire to present statements?

MR. CAIN: G. W. Cain, Pan American. Pan American recommends that the existing temporary rules for the Ranger Lake-Pennsylvanian Pool be made permanent.

MR. WHITE: Charles C. White, Gilbert, White and Gilbert, appearing on behalf of Texaco and Sunray-Midcontinent. Texaco last month completed its State Well "M" Well No. 1 in the subject area in the Pennsylvanian. This well flowed 222 barrels of oil in twenty hours on a 36/64-inch choke. Texaco feels that one well will efficiently and economically drain the area, and we seriously urge the Commission to adopt a permanent 80-acre basis.

Sunray-Midcontinent is the owner of one-half interest in the acreage, and they also urge the granting of the application.

MR. PAYNE: Any further statements?

MR. CHRISTY: R. S. Christy, Amerada. Amerada has one well in this Field, and we believe that the testimony shows that the present temporary order should be made permanent.

MR. COUCH: Terrell Couch of The Ohio Oil Company. I'll have to say that we are somewhat like Mobil, we are not actually in the field. We still have hopes, we have some acreage adjacent to it. I think that the testimony and the new data presented here and the production history since the last hearing certainly underlines the wisdom of the Commission in adopting the temporary rules, and definitely supports the proposition that they should be made permanent.

MR. PAYNE: Anyone else?

MR. JONES: I would like to make a brief closing statement, if I may.

MR. PAYNE: All right.

MR. JONES: If it please the Commission, we believe that the testimony presented here, which shows the development and the history of this pool since the date of this last hearing, has shown that the Commission has acted wisely in establishing temporary rules for this pool, and we feel it substantiates the fact that these rules should be made permanent.

We believe that the testimony at the last hearing and at this hearing has shown that one well can efficiently and economically drain 80 acres in this reservoir, at least 80 acres.

We feel that the testimony further shows that it would be economically unfeasible to drill to 40-acre proration units in the Field, and that the cost of the wells and the reserves to be anticipated establish that fact, and that 40-acre proration units would result in the drilling of unnecessary wells.

We believe that the fact that this pool is now, as it has been testified, one-third to one-half depleted, within the space of less than four years since the date of the completion of the first well, established the fact that certainly this would not be the time to require 40-acre proration unit drilling in this Field.

We respectfully submit that the evidence fully substantiates the fact that permanent rules should be adopted providing

for 80-acre proration units in the Field.

MR. PAYNE: If there is nothing further, the Commission will take Case 1668 under advisement and recess for ten minutes.

(Recess.)

MR. PAYNE: The hearing will come to order, please. We would like to reopen Case 1668 for the purpose of taking an additional statement.

MR. CAMPBELL: If the Commission please, I am Jack M. Campbell, Campbell and Russell, Roswell, New Mexico. I would like to enter an appearance in Case 1668 on behalf of Texas Pacific Coal and Oil Company, which owns a 42.8 percent in the Ranger Lease operated by Phillips.

Texas Pacific Coal and Oil Company would like to have the record show that it concurs and supports the application of Phillips in Case 1668.

MR. PAYNE: Case 1668 will be taken under advisement.

The Commission would like to advise at this time that the oil allowable decision will be deferred until later in the week.

***

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing was reported by me in Stenotype; and that the same was reduced to typewritten transcript under my personal supervision; and contains a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

DATED This 22nd day of August, 1960, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1963.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 4
CASE 1615

4 D

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

1. PHYSICAL PROPERTIES OF THE RESERVOIR ROCK

a.	Approximate Average Porosity	8.7%
b.	Maximum Measured Permeability	28 md.
c.	Average Connate Water	25%

2. STRUCTURAL FEATURES OF THE RESERVOIR

a.	Structure Map)	See Geological Exhibits
b.	Cross Sections)	
c.	Original Gas-Oil Contact	Not Applicable
d.	Original Water-Oil Contact	-6210 ft. subsea

3. CHARACTERISTICS OF RESERVOIR FLUID

a.	Average Gravity of S.T. Oil	40.4° API
b.	Estimated Saturation Pressure	2250 psia
c.	Formation Volume Factor	
	At Original Pressure	1.409
	At Saturation Pressure	1.430
d.	Solubility	
	At Original Pressure	754 cf/b
	At Saturation Pressure	754 cf/b

4. PRESSURE AND TEMPERATURE

a.	Original Reservoir Pressure	3530 psi 6-7-89
b.	Reservoir Temperature	162°F ~~-34~~ -16
c.	Reservoir Pressure History	See Attachment
d.	Average Shut-In Time Prior to Pressure Survey	48 hours
e.	Productivity Indices Data	
	Range - Bbl/Day/psi Pressure Drop	.793 to 1.553

5. STATISTICAL DATA

a.	Accumulated Production to 12-1-58	
	Oil	368,711 bbls.
	Gas	285,088 MCF
	Water	0 bbls.
b.	Monthly Oil Production)	See Attachment
c.	Monthly Producing Gas Oil Ratio)	
d.	Number of Producing Wells	5
e.	Spacing Pattern	Staggered 80-Acre Units
f.	State of Depletion still above bubble Point	Early or Development

6. GENERAL RESERVOIR MECHANICS

To date the primary source of reservoir energy has been the expansion of oil above the saturation pressure. The future reservoir mechanism will be a solution gas drive which may or may not be aided by a partial water drive. To date there has been no evidence of a water drive.

PRODUCTION DATA

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Phillips EXHIBIT No. 5
CASE 1668

YEAR AND MONTH	NUMBER OF WELLS	OIL PRODUCTION MONTHLY	OIL PRODUCTION ACCUMULATED	GAS PRODUCTION MONTHLY	GAS PRODUCTION ACCUMULATED	GAS OIL RATIO
1956						
October	1	5,669	5,669	6,217	6,217	1,097
November	1	5,360	11,029	5,628	11,845	1,050
December	1	5,812	16,841	6,087	17,932	1,047
Yearly Total		16,841		17,932		
1957						
January	1	5,299	22,140	5,562	23,494	1,050
February	1	6,369	28,509	5,070	28,564	796
March	1	6,069	34,578	4,831	33,396	796
April	1	5,988	40,566	4,766	38,161	796
May	2	6,773	47,339	5,545	43,706	819
June	2	10,736	58,075	8,847	52,553	824
July	2	11,276	69,351	9,292	61,845	824
August	2	10,674	80,025	8,795	70,640	824
September	3	15,780	95,805	12,949	83,589	821
October	3	16,296	112,101	14,279	97,868	876
November	3	15,075	127,176	13,211	111,079	876
December	4	22,211	149,387	14,665	125,744	660
Yearly Total		132,546		107,012		
1958						
January	4	21,648	171,035	14,294	140,038	660
February	4	19,665	190,700	12,984	153,022	660
March	4	20,665	211,365	15,209	168,231	736
April	4	18,809	230,174	13,843	182,074	736
May	4	19,344	249,518	14,237	196,311	736
June	4	18,689	268,207	13,755	210,066	736
July	4	19,170	287,377	14,108	224,174	736
August	4	20,512	307,889	16,173	240,347	788
September	4	20,130	328,019	14,816	255,163	736
October	4	19,965	347,984	14,695	269,858	736
November	5	20,727	368,711	15,230	285,088	736
December	4	19,876		16,780		844
Yearly Total						
1959						
January	4	19,810		16,724		844
February	5	22,680		15,199		670

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

BOTTOM HOLE PRESSURE DATA
DATUM -6050' SUBSEA

RANGER NO. 1			RANGER NO. 2			RANGER NO. 3			RANGER NO. 4		
DATE	HRS SI	BHP	DATE	HRS SI	BHP	DATE	HRS SI	BHP	DATE	HRS SI	BHP
11-15-56	48	3530									
7-24-57	48	2800	7-10-57	48	2843	9-13-57	48	3597			
12-26-57	48	2569							12-26-57	48	2838
11-21-58	48	2311	11-18-58	48	2305	11-28-58	48	2551	11-18-58	48	2004
12-29-58	24	2144	12-19-58	72	2212	1-5-59	24	2440	1-6-59	48	1882
3-29-59	49	2009	3-29-59	53	2025	3-29-59	51	2360	3-29-59	49	1795

Ranger No. 6

4-25-59 48 SI 2591

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 6
CASE 1668

(3)

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 7
CASE 1668

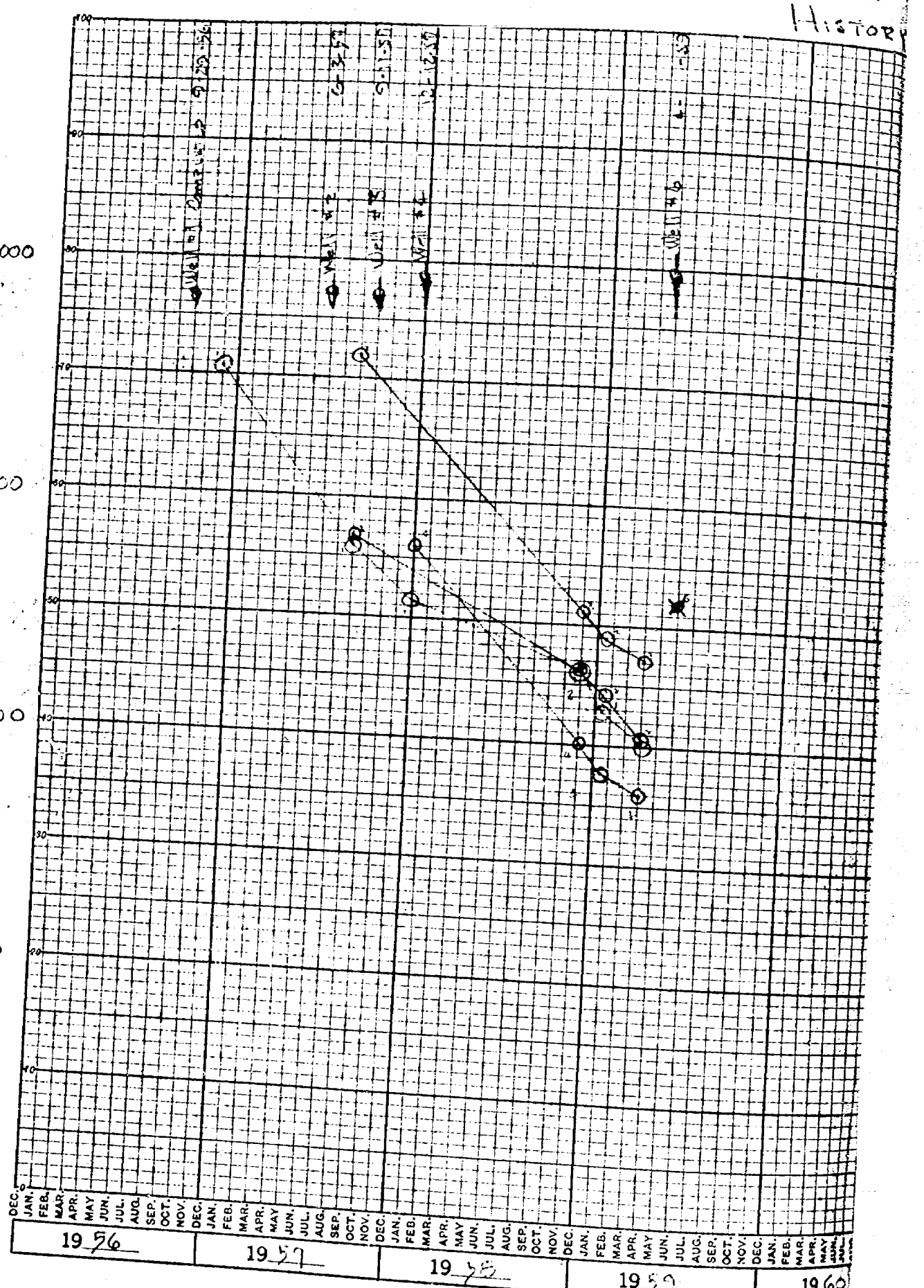
7

RANGER LEASE

Lease Operating Statements

MONTH	PRODUCTION	CUMULATIVE PRODUCTION
1956		
September	596	596
October	5,643	6,239
November	5,365	11,604
December	5,822	17,426
1957		
January	5,311	22,737
February	6,570	29,307
March	6.068	35,375
April	5,987	41,362
May	6,849	48,211
June	10,315	58,526
July	11,572	70,098
August	10,793	80,891
September	15,086	95,977
October	16,394	112,371
November	14,673	127,044
December	24,509	151,553
1958		
January	19,775	171,328
February	20,578	191,906
March	20,680	212,586
April	17,857	230,443
May	20,280	250,723
June	17,735	268,458
July	19,193	287,651
August	20,507	308,158
September	20,118	328,276
October	19,850	348,126
November	18,910	367,036
December	18,264	385,300
1959		
January	19,368	404,668
February	18,445	423,113
March	19,556	442,669

RANGER LAKE PENN
RANGER LEASE
HISTOR



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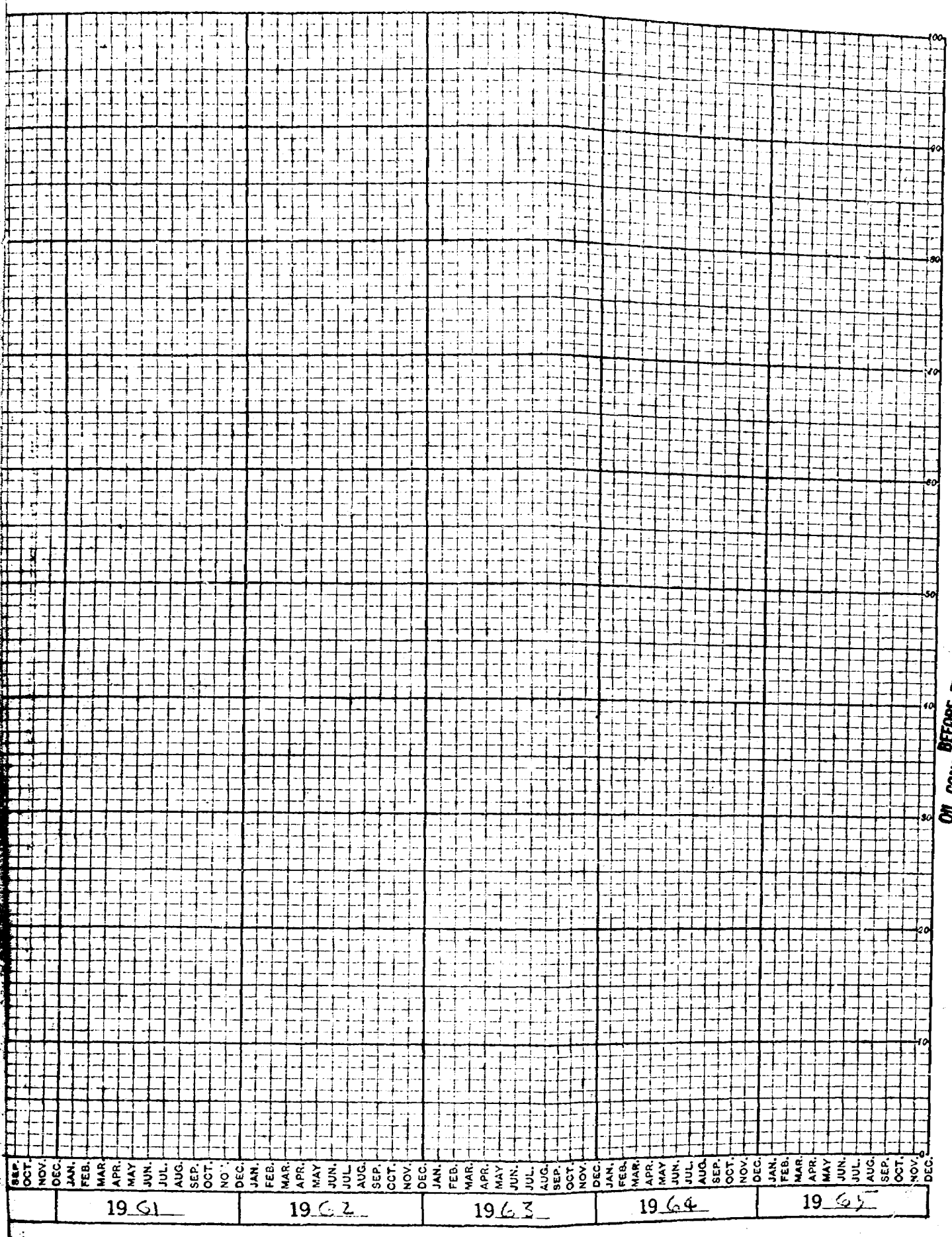
YLVANIAN FIELD
PRESSURE

8



BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 2
CASE 1758

OPERATING REPORT OF FLOWING WELLS

LEASE *Rangeal* WELL NO *1*

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	MCF	OIL	GRAVITY OIL	WTR	GAS/OIL RATIO	PERCENT B.S	PERCENT WTR	PERCENT SD	witnessed
9-28-58	24	1/4	adj	pkr	550/230	733.2	406	41.1	0	1806	1.2			State potential
11-13-58	✓	11/64	✓	✓	700	214.2	216.2	40.1	0	991	.2			special
1-25-59	✓	14/64	✓	✓	700	346.8	406	41.1	0	854	.4			Getty Test
4-12-59	✓	12/64	✓	✓	650	202.4	234	40	0	865	.2			Getty State
5-20-59	22 1/2	13/64	✓	pkr	525	208.3	196	40.1	0	1063	.2			PI Check
[illegible]-59	24	13/64	✓		500	102.5	212	40	0	[illegible]	.4			XS
2-1-58	24	15/64	adj	pkr	300	164.6	210	42	0	784	.6			fa
4-8-58	✓	14/64	✓	✓	325	128.8	196	40.1	0	657	.4			ga
7-9-58	✓	✓	✓	✓	300	157.8	194	41	0	813	.4			ga
10-15	✓	14/64	✓	✓	300	177.7	200	40	0	888	.4			xs
11-19	24	14/64	adj	Pkr	275	72.92	150	39	0	486	.4			Special Test
1-13-59	✓	✓	✓	✓	110	202.4	198	40	0	1022	.3			

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. [illegible]
CASE 1668

OPERATING REPORT OF FLOWING WELLS
LEASE Ranger WELL No. 2

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	B.O.P.	OIL	GRAVITY CORR	[illegible]	GAS/OIL RATIO	% CUT B.S	% CUT [illegible]	% CUT [illegible]	
7-15-57	24	11/64	Adj	pkr	450	202.3	205	40.2	0	987	.3			[illegible]
10-21-57	✓	13/64	✓	✓	490	615	215.26	41	0	616	.4			KS
2-27-58	24	16/64	adj	pkr	440	184.0	211	41	0	872	.3			[illegible]
4-10-58	✓	2/64	✓	✓	410	60.42	197	40.1	0	307	.4			
7-21-58	✓	16/64	✓	✓	✓	136.4	194	39.9	0	703	—			[illegible]
10-17	✓	19/64	✓	✓	325	184.0	201	40	0	915	.4			

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OPERATING REPORT OF FLOWING WELLS
LEASE Ranger WELL NO 3

	DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	GAS M.C.F	OIL	GRAVITY OIL	WATER	GAS/OIL RATIO	B.S	[illegible]	New Well
P	9-3-57	12	3/8	adj	pkr	300	442.2	586	40.4	—	255	.6		State Potential Test
	9-6-57	✓	✓	✓	✓	300/420	283.7	642	40.3	3	884	—		special test all zones
Pot	9-6-57	24	✓	✓	✓	300/400	567.4	635	40.6	3	897	.3		special test all perf
	10-7-57	✓	16/64	✓	✓	640	177.7	210	41	0	846	.4		30 days of the potential
Sem	2-16-58	24	13/64	adj	pkr	510	188.7	210	40	0	899	.3		test
✓	4-12-58	✓	✓	✓	✓	490	69.92	196	40.1	0	357	✓		other test
Sem	7-11-58	✓	✓	✓		490	184.0	196	41	0	939	—		Semi annual
✓	10-4-9	✓	✓	✓	✓	375	208.2	190	39	0	1096	.3		—
P	1-10-59	✓	✓	✓	✓	225	220	172	—	0	1279	.4		—
	1-11	✓	✓	✓	✓	225	129	136	39.1	0	947	.3		—

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OPERATING REPORT OF FLOWING WELLS
LEASE *Rangers* WELL NO *4*

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	[illegible]	[illegible] OIL	GRAVITY OIL	[illegible]	GAS/OIL RATIO	[illegible] S.S	[illegible]	REMARKS
12-1-57	24	3/8	adj	pkr	260	312.1	319	40.4	0	978	.3		new well State potential test
12-5-57	✓	✓	✓	✓	460	214.2	322	41	0	665	.3		1st test after [illegible] completion
12-[illegible]-57	✓	✓	✓	✓	460/420	258.9	372.33	41.6	0	696	.3		2nd ✓ ✓ ✓ ✓
1-5-58	24	18/64	adj	pkr	325	214.2	215	41	0	999	.4		[illegible] 30 day after pot.
2-19-58	24	19/64	✓	✓	490	150.9	211	40	0	715	.2		[illegible]
4-23-58	✓	✓	✓	✓	200	72.92	195	40.1	0	374	.2		—
7-11-58	✓	21/64	✓	✓	190	136.4	195	39.2	0	699	.3		—
10-23	✓	25/64	✓	✓	150	89.6	210	39	0	427	.3		—

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RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

DETERMINATION OF DRAINAGE AREA FOR PHILLIPS RANGER NO. 1

On November 21, 1958 the BHP was determined to be 2311 psi. Accumulated production to this date was 137,000 barrels. Assuming this well to be the only one in the reservoir, then the original oil in place contributing to the performance of this well can be calculated from the following formula:

$$N = \frac{dNB}{B-Bo} = \frac{137,000 \times 1.429}{1.429-1.409} = \frac{195,773}{.02} = 9,788,650 \text{ bbls.}$$

The original oil in place per acre can be determined as follows:

$$\text{Oil in place} = \frac{7758 \times .087 \times (1-.25)}{1.409} \times 32 = 11,488 \text{ bbls. per acre}$$

Area being drained by Phillips Ranger No. 1 then is:

$$\frac{\text{Total oil contributing}}{\text{Oil in place per acre}} = 9,788,650/11488 = 852 \text{ acres}$$

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RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

Phillips Ranger No. 1 - Comparison of actual and theoretical recoveries.

Based on the assumption that only 80 acres is contributing to the production of a well, what would the theoretical recovery be from original conditions to 2311 psi? Inasmuch as the pressure of 2311 psi is still above the saturation pressure, the recovery expressed in per cent of original oil in place can be calculated from the following formula.

$$dN/N = B-Bo/B = 1.429-1.409/1.429 = .02/1.429 = 1.4\%$$

If only this eighty-acre tract were contributing to the production of the Phillips Ranger No. 1, then its actual recovery would approximate the theoretical of 1.4%. If the actual recovery efficiency is greater, it means that more than 80 acres are contributing to the performance of this well. If the recovery is less, then less than eighty acres are contributing to the performance of this well.

$$\text{Original oil in place per acre foot} = \frac{7758 \times \phi \times (1-Sw)}{Bo} = \frac{7758 \times .087 \times (1-.25)}{1.409} = 359 \text{ bbls.}$$

Original oil in place per 80 acres = 359x32x80 = 918,000 bbl.

Recovery to November 21, 1958 and a BHP of 2311 psi is 137,000 bbls.

Actual recovery = 137,000/918,000 = 14.9%

Obviously, a much larger area than 80 acres is contributing to the performance of the Phillips Ranger No. 1.

Phillips Exhibit #3

PHILLIPS PETROLEUM COMPANY

Economics for development based on 80 acre units recovering 210,000 BO per well, and for 40 acre units recovering 105,000 BO per well are as follows:

80 acre unit ultimate average primary recovery 210,000 BO per well.	
Initial investment 10,400 ft. development well	$200,000.
Net reserves 183,750 BO	$475,913.
Value of net oil @ $2.85/BO less OH & Tax	$244,000.
Less 11 years lease expenses & initial investment	$231,913.
Profit before tax	
Pay out 18 months @ 163 BOPD (av. 35 BOPD/unit)	
Est. ARR 43%	
40 acre unit development	
Initial investment per well	$200,000.
Gross reserves 105,000 BO	
Net reserves 91,875 BO	$237,956.
Value of net oil (Less OH & Tax)	$244,000.
Less investment & 11 years lease expenses	$ 6,044.
Loss per well	

40 acre development would call for a recovery of 108,000 BO to be a break even proposition.

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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. ____
CASE ____

4

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

1. PHYSICAL PROPERTIES OF THE RESERVOIR ROCK

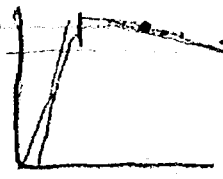
a.	Approximate Average Porosity	8.7% core 14 md
b.	Maximum Measured Permeability	28 md.
c.	Average Connate Water	25%

2. STRUCTURAL FEATURES OF THE RESERVOIR

a.	Structure Map)	See Geological Exhibits
b.	Cross Sections)	
c.	Original Gas-Oil Contact	Not Applicable
d.	Original Water-Oil Contact	-6210 ft. subsea -6211

3. CHARACTERISTICS OF RESERVOIR FLUID

a.	Average Gravity of S.T. Oil undersaturation	40.4° API
b.	Estimated Saturation Pressure	2250 psia
c.	Formation Volume Factor	
	At Original Pressure ✓	1.409 RB/STB
	At Saturation Pressure 1430 1409	1.430
d.	Solubility	
	At Original Pressure	754 cf/b
	At Saturation Pressure	754 cf/b



4. PRESSURE AND TEMPERATURE

a.	Original Reservoir Pressure	Press 3530 psi after 7000 hrs prod.
b.	Reservoir Temperature	162°F
c.	Reservoir Pressure History	See Attachment
d.	Average Shut-In Time Prior to Pressure Survey	48 hours
e.	Productivity Indices Data	
	Range - Bbl/Day/psi Pressure Drop	.793 to 1.553

5. STATISTICAL DATA

a.	Accumulated Production to 12-1-58	Dec
	Oil	368,711 bbls.
	Gas	285,088 MCF
	Water	0 bbls.
b.	Monthly Oil Production)	See Attachment
c.	Monthly Producing Gas Oil Ratio)	
d.	Number of Producing Wells	6 5
e.	Spacing Pattern	Staggered 80-Acre Units
f.	State of Depletion	Early or Development

6. GENERAL RESERVOIR MECHANICS

To date the primary source of reservoir energy has been the expansion of oil above the saturation pressure. The future reservoir mechanism will be a solution gas drive which may or may not be aided by a partial water drive. To date there has been no evidence of a water drive.

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PRODUCTION DATA

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

YEAR AND MONTH	NUMBER OF WELLS	OIL PRODUCTION MONTHLY	OIL PRODUCTION ACCUMULATED	GAS PRODUCTION MONTHLY	GAS PRODUCTION ACCUMULATED	GAS OIL RATIO
1956						
October	1	5,669	5,669	6,217	6,217	1,097
November	1	5,360	11,029	5,628	11,845	1,050
December	1	5,812	16,841	6,087	17,932	1,047
Yearly Total		16,841		17,932		
1957						
January	1	5 299	22,140	5,562	23,494	1,050
February	1	6,369	28,509	5,070	28,564	796
March	1	6,069	34,578	4,831	33,396	796
April	1	5,988	40,566	4,766	38,161	796
May	2	6,773	47,339	5,545	43,706	819
June	2	10,736	58,075	8,847	52,553	824
July	2	11,276	69,351	9,292	61,845	824
August	2	10,674	80,025	8,795	70,640	824
September	3	15,780	95,805	12,949	83,589	821
October	3	16,296	112,101	14,279	97,868	876
November	3	15,075	127,176	13,211	111,079	876
December	4	22,211	149,387	14,665	125,744	660
Yearly Total		132,546		107,312		
1958						
January	4	21,648	171,035	14,294	140,038	660
February	4	19,665	190,700	12,984	153,022	660
March	4	20,665	211,365	15,209	168,231	736
April	4	18,809	230,174	13,843	182,074	736
May	4	19,344	249,518	14,237	196,311	736
June	4	18,689	268,207	13,755	210,066	736
July	4	19,170	287,377	14,108	224,174	736
August	4	20,512	307,889	16,173	240,347	788
September	4	20,130	328,019	14,816	255,163	736
October	4	19,965	347,984	14,695	269,858	736
November	5	20,727	368,711	15,230	285,088	736
December	4	19,876		16,780		844
Yearly Total						
195						
January	4	19,810		16,724		844
February	5	22,680		15,199		670

RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

BOTTOM HOLE PRESSURE DATA
DATUM -6050 SUBSEA

RANGER NO. 1			RANGER NO. 2			RANGER NO. 3			RANGER NO. 4		
DATE	HRS SI	BHP	DATE	HRS SI	BHP	DATE	HRS SI	BHP	DATE	HRS SI	BHP
11-15-56	48	3530									
7-24-57	48	2800	7-10-57	48	2843	9-13-57	48	3597			
12-26-57	48	2569							12-26-57	48	2838
11-21-58	48	2311	11-18-58	48	2305	11-28-58	48	2551	11-18-58	48	2004
12-29-58	24	2144	12-19-58	72	2212	1-5-59	24	2440	1-6-59	48	1882
3-29-59	49	2009	3-29-59	53	2025	3-29-59	51	2360	3-29-59	49	1795

2 mos after ... @ 7000 bbls prod.

Ranger No. 6.

Date	Hrs. S.I.	BHP
4-25-59	48	2591

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RANGER LEASE

Lease Operating Statements

MONTH	PRODUCTION	CUMULATIVE PRODUCTION
1956		
September	596	596
October	5,643	6,239
November	5,365	11,604
December	5,822	17,426
1957		22,737
January	5,311	29,307
February	6,570	35,375
March	6.068	41,362
April	5,987	48,211
May	6,849	58,526
June	10,315	70,098
July	11,572	80,891
August	10,793	95,977
September	15,086	112,371
October	16,394	127,044
November	14,673	151,553
December	24,509	171,328
1958		191,906
January	19,775	212,586
February	20,578	230,443
March	20,680	250,723
April	17,857	268,458
May	20,280	287,651
June	17,735	308,158
July	19,193	328,276
August	20,507	348,126
September	20,118	367,036
October	19,850	385,300
November	18,910	404,668
December	18,264	423,113
1959		442,669
January	19,368	
February	18,445	
March	19,556	

OPERATING REPORT OF FLOWING WELLS
LEASE Rangel WELL NO. 1

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	MCF	OIL	GRAVITY OIL	WATER	GAS/OIL RATIO	PERCENT B.S.		SD	[illegible]
2-28-56	24	1/4	adj	pkr set	550/720	733.2	406	41.1	0	1806	1%			State potential
11-13-56	✓	11/64	✓	✓	700	214.2	216.2	40.1	0	991	.2			special
4-25-57	✓	12/64	✓	✓	700	346.8	406	41.1	0	854	.4			Qtly Test
4-12-57	✓	12/64	✓	✓	450	202.4	234	40	0	865	.2			Qtly - State
3-20-57	22¼	13/64	✓	pkr	525	208.3	196	40.1	0	1063	.2			[illegible]
[illegible]-57	24	13/64	✓	✓	500	102.5	212	40	0	[illegible]	.4			XS
2-4-58	24	15/64	adj	pkr	300	164.6	210	42	0	784	.6			QA
4-8-58	✓	15/64	✓	✓	335	128.8	196	40.1	0	657	.4			QA
7-4-58	✓		✓	✓	300	157.8	194	41	0	813	.4			QA
10-15	✓	14/64	✓	✓	300	177.7	200	40	0	888	.4			XS
11-19	24	14/64	Adj	Pkr	275	72.92	150	39	0	496	.4			Special Test
1-13-59	✓	✓	✓	✓	110	202.4	198	40	0	1022	.3			

OPERATING REPORT OF FLOWING WELLS
LEASE Ranger WELL NO 2

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	M.C.F	OIL	GRAVITY OIL	WATER	GAS/OIL RATIO	PERCENT B.S	PERCENT WATER	
7-18-57	24	12/64	Adj	pkr	450	202.3	205	40.2	0	987	.3		[illegible]
10-28-57	✓	13/64	✓	✓	490	615	215.26	41	0	616	.4		KB
2-2-58	24	16/64	adj	pkr	440	184.0	211	41	0	872	.3		[illegible]
4-10-58	✓	7/64	✓	✓	410	60.42	197	40.1	0	307	.4		[illegible]
7-28-58	✓	10/64	✓	✓	✓	136.4	194	39.9	0	703	—		[illegible]
10-17	✓	19/64	✓	✓	325	184.0	201	40	0	915	.4		

Lease: Bangor   Well No. 3

DATE	HRS	Choke size	Choke type	Flowing press. csg	Flowing press. tbg	[illegible]	[illegible]	Gravity oil	[illegible]	Gas/oil ratio	[illegible]	[illegible]	[illegible]	Remarks
9-3-57	12	3/8	Adj	pkr	300	442.4	286	40.4	—	255	.6			New Well
9-6-57	✓	✓	✓	✓	300/420	283.7	~~644~~	40.3	3	884	—			State Potential Test
9-6-57	24	✓	✓	✓	200/400	567.4	635	40.6	3	892	.3			special test all zones
10-7-57	✓	16/64	✓	✓	640	177.7	210	41	0	846	.4			special test all perf.
2-14-58	24	15/64	adj	pkr	810	188.7	200	40	0	822	.3			Redone the potential Test
4-12-58	✓	✓	✓	✓	490	62.92	196	40.2	0	357	—			[illegible] Test
7-11-58	✓		✓		490	184.0	696	41	0	232	—			Retest annual
10-19	✓	✓	✓	✓	375	208.3	190	39	0	1096	.3			—
1-10-59	✓	✓	✓	✓	225	320	172	—	0	1279	1.2			—
1-11	✓	✓	✓	✓	225	129	136	39.1	6	947	.5			—

OPERATING REPORT OF FLOWING WELLS
LEASE *Rangers* WELL NO. *4*

DATE	HRS	CHOKE SIZE	CHOKE TYPE	FLOWING PRESS CSG	FLOWING PRESS TBG	[illegible]	[illegible]	GRAVITY	[illegible]	G/OIL RATIO	B.S	[illegible]	[illegible]	REMARKS
														New Well.
12-4-57	24	3/8	adj	pkr	260	312.1	319	40.4	0	978	.3			State potential test
12-5-57	✓	✓	✓	✓	460	214.2	322	41	0	665	.3			last test after well completion
12-[illegible]-57	✓	✓	✓	✓	460/420	258.9	372.33	41.6	0	696	.3			3rd [illegible]
1-5-58	24	18/64	adj	pkr	325	214.2	215	41	0	999	.4			1st + 30 day after [illegible]
2-17-58	24	19/64	✓	✓	490	150.9	211	40	0	715	.2			GOR
4-[illegible]-58	✓	✓	✓	✓	200	72.92	195	40.1	0	374	.2			
7-11-58	✓	21/64	✓	✓	190	136.4	195	39.2	0	699	.3			
10-23	✓	24/64	✓	✓	150	89.6	210	39	0	437	.3			

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RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

DETERMINATION OF DRAINAGE AREA FOR PHILLIPS RANGER NO. 1

On November 21, 1958 the BHP was determined to be 2311 psi. Accumulated production to this date was 137,000 barrels. Assuming this well to be the only one in the reservoir, then the original oil in place contributing to the performance of this well can be calculated from the following formula:

$$N = \frac{dNB}{B-Bo} \left(= \frac{137,000 \times 1.429}{1.429-1.409}\right) = \frac{195,773}{.02} = 9,788,650 \text{ bbls.}$$

The original oil in place per acre can be determined as follows:

$$\text{Oil in place} = \frac{7758 \times .087 \times (1-.25)}{1.409} \times 32 = 11,488 \text{ bbls. per acre}$$

Area being drained by Phillips Ranger No. 1 then is:

$$\frac{\text{Total oil contributing}}{\text{Oil in place per acre}} = 9,788,650/11488 = 852 \text{ acres}$$

250,000 1.430
1.430 - 1.409

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RANGER LAKE (PENNSYLVANIAN) FIELD

LEA COUNTY, NEW MEXICO

Phillips Ranger No. 1 - Comparison of actual and theoretical recoveries.

Based on the assumption that only 80 acres is contributing to the production of a well, what would the theoretical recovery be from original conditions to 2311 psi? Inasmuch as the pressure of 2311 psi is still above the saturation pressure, the recovery expressed in per cent of original oil in place can be calculated from the following formula.

$$dN/N = B-Bo/B = 1.429-1.409/1.429 = .02/1.429 = 1.4\%$$

If only this eighty-acre tract were contributing to the production of the Phillips Ranger No. 1, then its actual recovery would approximate the theoretical of 1.4%. If the actual recovery efficiency is greater, it means that more than 80 acres are contributing to the performance of this well. If the recovery is less, then less than eighty acres are contributing to the performance of this well.

$$\text{Original oil in place per acre foot} = \frac{7758 \times \phi \times (1-Sw)}{Bo}$$

$$= \frac{7758 \times .087 \times (1-.25)}{1.409} = 359 \text{ bbls.}$$

Original oil in place per 80 acres = 359x32x80 = 918,000 bbl.

Recovery to November 21, 1958 and a BHP of 2311 psi is 137,000 bbls.

Actual recovery = 137,000/918,000 = 14.9%

Obviously, a much larger area than 80 acres is contributing to the performance of the Phillips Ranger No. 1.

I N D E X

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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
MAY 14, 1959

IN THE MATTER OF:

CASE 1668 Application of Phillips Petroleum Company for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool and certain adjacent acreage in Lea County, New Mexico, to provide for 80-acre spacing units and well location requirements, and such other provisions as the Commission deems necessary.

BEFORE:

Mr. Murray Morgan
Gov. John Burroughs
Mr. A. L. Porter

T R A N S C R I P T I O N O F P R O C E E D I N G S

Mr. Porter: Next case on the docket is 1668.

MR. PAYNE: Case 1668. Application of Phillips Petroleum Company for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico.

MR. SPANN: My name is Charles C. Spann of Grantham, Spann & Sanchez, 904 Simms Building, Albuquerque. I have associated with me Joseph Meroney, attorney, Midland, Texas, representing Phillips Petroleum Company's application.

MR. WHITE: I am Charles White of Gilbert, White & Gilbert, appearing on behalf of Mr. Gordon M. Cone, one of the operators of the Pool from Lovington, New Mexico.

MR. PORTER: Anyone else desire to make an appearance in Case 1668?

Mr. Spann, how many witnesses do you have in this case?

MR. SPANN: I have two.

(Witness sworn)

CARL F. LAWRENCE,

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

DIRECT EXAMINATION

BY MR. SPANN:

MR. SPANN: Our first witness will be Mr. Lawrence.

Q (By Mr. Spann) Would you state your name for the record, please?

A Carl F. Lawrence.

Q By whom are you employed, Mr. Lawrence?

A I am employed by the Phillips Petroleum Company at Midland, Texas, in the position of Division Development Geologist.

Q And how long have you been so employed?

A Six years.

Q Have you previously testified before this Commission, and have you had your qualifications accepted as a petroleum geologist?

A Yes, sir.

MR. SPANN: Are there any questions of Mr. Lawrence' qualifications, Mr. Porter?

MR. PORTER: No questions.

Q Mr. Lawrence, have you had occasion in your capacity as a geologist for Phillips Petroleum Company to study the Ranger Lake - Pennsylvanian Pool in Lea County, New Mexico?

A Yes, sir, I have.

Q And just what sort of a study did you make of it?

A I followed the field from its inception in the drilling of the discovery well, the Ranger Lake No. 1, and in studying the field, we have constructed a structure map and cross section.

Q Do you have a structure map available here?

A Yes, sir.

(Whereupon, Phillips' Exhibit No. 1 was marked for identification.)

Q Now, referring you to what has been marked as Phillips' Exhibit No. 1, I'll ask you if that is your structure map, Mr. Lawrence?

A Yes, sir, it is.

Q Will you just explain to the Commission what that shows?

A This is a structure map of the Ranger Lake Field constructed on top of the Ranger Lake pay zone. The contour map is made up on 25-foot contour intervals. The various wells indicated

on the structure plat are completed wells in the Ranger Lake pay zone. Starting in Section 24, the Gordon No. 2-24 State encountered the top of the pay at minus 6148. And Gordon No. 1-24 State, located in the NW of the SW encountered the top of the pay zone at 6165. The discovery well, Phillips West Ranger Unit No. 1, located in the SE of the SE of 23, encountered the top of the Ranger Lake at minus 6113. The West Ranger Unit No. 3 located in the NW of the SE, encountered the top at minus 6078. The West Ranger Unit No. 4, located in the SE of the NW, encountered the top of the pay at minus 6077. The West Ranger Unit No. 6, located in the SE of the SW, encountered the top at a minus 6,069. The West Ranger Unit No. 2, located in the NW of the NW of Section 25, encountered the top of the pay at minus 6133.

Now, using those datums we have constructed the field structure as we interpret it as an anticlinal terracing structure. We feel that oil entrapment occurred due to a combination of structure and stratagraphic conditions. The lighology of the Ranger Lake pay is a dolomitic limestone having some characteristics of a transgressive reef body.

Q Now, have there been any wells, to your knowledge, completed since you prepared this structure map?

A Yes, sir. The Phillips West Ranger Unit No. 6 has been completed; the potential in that well was 400 barrels of oil per day. This well came in at a structural datum that conformed with the structure map that was presented at the previous hearing.

Q Well now, you have the No. 6 on this map, do you not?

A Yes, sir. The No. 6 West Ranger Unit would be located in the SE of the SW of Section 23, 12 South, 34 East.

Q I am referring to any recent completions within the last few days. Do you know of any?

A There has been a recent drill stem test on the J. C. Barnes No. 1 Humble State Well located in the SE of the SE of Section 27, 12 South, 34 East. That well drill stem tested the Ranger Lake pay zone from 10,298 to 10,355; was opened 57 minutes; had gas to the surface in 42 minutes; oil to the surface in 55 minutes; flowed to the pit at a rate of 40 barrels per hour; reserves a full string of oil with no water. The initial 15 minute shut-in pressure was 3225, the flow pressures were 790, 2100,and the final shut-in pressure was 2700 pounds. The top of West Ranger pay was encountered at a minus datum of 6167, and that well which conforms with our structure map that we have here as well as the structure map that was presented at the previous hearing. We didn't have to move a contour line with the drilling of that well, it came in as we had predicted it.

Q Have the boundaries of this field been established?

A Only the eastern limits of the field we feel have been established by an oil-water contact of minus 6211. I will indicate this on Exhibit No. 1 by drawing a pencil line at the position of 6211 datum. The northern, western and southern limits as well as the southernlimits of the field have not yet been

established as currently there has been quite a bit of drilling activity in the area.

Tidewater is drilling their No. 1 Case State, located to the NE of the NE of Section 27. Tidewater has also staked locations in the NE/4 of Section 15, 12 South, 34 East. Independent operator, Tom Thagett has staked three locations in Section 28, 12 South, 34 East, indicating that other operators feel the same way we do, that the limits of the field in the northwest and southerly directions have not yet been established.

Q And you feel that there is the possibility of further development in that area?

A Definitely, yes, sir.

Q And within the next year, do you have any idea as to how many wells might be expected to be drilled?

A Within the period of say,6/1/59 to 6/1/60, I would say that at least ten wells will be drilled in the area on 80-acre spacing.

Q And the area is being developed on 80-acre pattern at this time?

A Yes, sir, it is.

Q Now, have you also prepared a cross section of the field, Mr. Lawrence?

A Yes, sir, I have.

MR. SPANN: I would like to have this marked as Phillips' Exhibit No. 2.

(Whereupon, Phillips' Exhibit No. 2 was marked for identification.)

Q Directing your attention to what has been marked as Phillips' Exhibit 2, would you describe that Exhibit and state to the Commission what it shows?

A Phillips' Exhibit No. 2 is a northwest southeast cross section extending in the South Phillips West Ranger No. 2, located in the NW of the NW of Section 25 to the West Ranger Unit No. 1, located in the SE of the SE of 23, to the No. 3 Well, located in the NW of the SE of Section 23, and terminating with Well No. 4 in the SE of the NW of Section 23. The cross section is labeled A A Prime, A being in the southeast portion, A Prime in the northwest portion. The cross section is made up of radio active logs run on the four just mentioned wells. The cross section indicates the top of the Cisco-Pennsylvanian age or datum on sealevel, which is a minus 5900, the top of the Ranger Lake pay zone, and our oil-water contact at minus 6211. This oil-water contact is shaded -- the area below 6211 is shaded a blue color; the area above indicating the oil columns is shaded a red color. The cross section also indicates the completion intervals of the four wells, the completion data, initial potentials, and the completion date. Now, this cross section, or on this cross section we've indicated what we feel is a gross upper porosity development. This is indicated by the cross-thaxed area shown in the upper portion of the cross section.

Q Now, would you discuss the quality of the various wells

with reference to that upper porosity development?

A Yes. We feel the quality of the wells is dependent on the upper porosity development that we have in the upper porosity zones, notably, our No. 1 and 2 Wells are principally of the same caliber, and the No. 2 Well we feel that we have 18 feet of net porosity development in the upper portions of pay zone. No. 1 Well, we have 10 feet of net porosity development in the upper portion. We feel those two wells are very comparable in both potential and producing capabilities. Well No. 3 is the best -- is the best well in the field notably, because it has 36 feet of net porosity development in this upper porosity zone. It is open to the well bore in that particular well.

Q Was the No. 1 Well perforated in that zone?

A No, sir, the No. 1 Well was not perforated in that upper zone. Well No. 2 was perforated in that upper zone.

Q Would that fact have any effect on the initial pressures of the wells, in your opinion?

A Well, sir, I feel that there is drainage from this upper zone in Well No. 1. Even though it is not perforated, I feel that the oil is draining downward and we are producing it from the existing perforations.

Q But it is vertical drainage?

A Yes, sir.

Q Go ahead.

A Well No. 4 is perhaps our poorest well. It has only

13 feet of net upper porosity development, and this section is opened to the well bore. So we feel that the caliber of the various wells is directly in proportion to the upper porosity development present in the wells.

Q Now, do you believe that these wells that you've completed are producing from a common source of supply and are within a common reservoir?

A Yes, sir, I do.

Q Now, I take it that -- let's see, Well No. 6 is not on that cross section?

A No, sir. Well No. 6, if projected on to the cross section, would fall into the position approximately here. I will indicate this on here.

Q Would you discuss the porosity development in these wells in relation to Well No. 6, the upper porosity?

A Well No. 6 did have the upper porosity development, and it is opened to the well bore in that particular well.

Q Now, how about the quality of Well No. 6 as compared with those?

A The quality of Well No. 6 is in the same order and magnitude of Well No. 3.

Q Now, based on your examination of the wells drilled and study of the field, do you believe there is communication between these wells, and what is your opinion about the area that one particular well can drain, Mr. Lawrence?

A Yes, sir. After studying this field in detail, examining samples, I feel that there is definitely communication between these wells and that one well will drain 80 acres.

QUESTIONS BY MR. MERONEY:

Q Mr. Lawrence, I believe it is true that the upper porosity development of which you spoke in the common reservoir appears in each well of the field that has been drilled?

A Yes, sir, that's what I base my opinion on that one well will drain 80 acres, the correlativeness of each identical zone throughout each well, as well as good porosity, permeability, and principally that is what I base my opinion on.

Q Mr. Lawrence, does that same upper porosity development also appear in the J. C. Barnes Well?

A From sample analysis, yes, sir, it did.

Q And would it have appeared in the Gordon Cone Well up here or --

Q We couldn't deflect any. The upper section, it apparently shaled out in the Gordon Cone Well No. 1-24 State, located in the NW of the SW of Section 24. That is primarily what we are basing our eastern limits of the field on.

Q And in this type of reservoir, in this acreage, would this particular type of porosity development be a common phenomena?

A Yes, sir.

Q (By Mr. Spann) I believe that's all with reference to that Exhibit, Mr. Lawrence. Now, in your -- I believe you can sit down here, if you care to. Were these maps or Exhibits 1 and 2 prepared under your supervision or by you?

A Yes, sir, they were.

MR. SPANN: I would like to, at this time, move the admission of -- into evidence of Exhibits 1 and 2.

MR. PORTER: Without objection, Phillips' Exhibits 1 and 2 will be admitted into the record.

(Whereupon, Phillips' Exhibits Nos. 1 and 2 were received in evidence.)

Q Nor, Mr. Lawrence, in your capacity as petroleum geologist for Phillips, have you had occasion to go into the economics of the Ranger Lake-Pennsylvanian Field and prepare estimates on the oil that might be recovered, the cost involved in developing this field, and possible resulting profits to the Company?

A Yes, sir, that is part of your responsibility before any well is drilled, to make an economic analysis, to see whether it will be a profitable venture to drill the well.

Q And have you done that in connection with the Ranger Lake-Pennsylvanian Field?

A Yes, sir, I have.

MR. SPANN: Now, I would like this marked as Exhibit No. 3, Phillips' Exhibit No. 3.

(Whereupon, Phillips' Exhibit No. 3 was marked for identification.)

Q Now, directing your attention to Phillips' Exhibit 3, I'll ask you to state what that is?

A Exhibit No. 3 is our economic analysis which we make on any well before we drill it to see whether it will be a profitable venture. The form that we use is identical with that form and figures which were used in justifying the drilling and development

of the wells existing in the Ranger Lake Field.

Q Does this Exhibit reflect your estimates on individual wells or the average of wells drilled in that Field?

A It represents an average. We cannot just take one well and say all the wells will be the same. We try to arrive at an average well -- an average recovery. We feel that is the best way to decide whether it will be a profitable venture to drill a well.

Q Well now, will you just go over Exhibit 3 and tell the Commission what it shows?

A Yes, sir. Exhibit No. 3 shows the economics for development based on 80-acre proration units recovering 210,000 barrels of oil per well, and for 40-acre units recovering 105,000 barrels of oil per well. Now, those economics are as follows: An 80-acre proration unit, the ultimate average primary recovery would be 210,000 barrels of oil per well. The initial investment for a 10,400 foot development well would be $200,000. Now, the net reserves, after we take our royalty out of it, or the royalty out of it, would be 183,750 barrels of oil. The value of that oil at $2.85 per barrel less overhead and taxes, would be $475,913. Subtract your eleven-year lease operating expenses and initial investment, which is $244,000. This leaves a profit before taxes of $231,913. Now, the well before payout in eighteen months at 163 barrels of oil per day, that would give the Company or individual drilling of the well an annual rate of return of 43 percent.

I might add at this time that our minimum, the point at which we decide to drill a well or not to drill a well, at this point is 22 percent. In other words, if a well will not make between 20 and 22 percent annual rate of return, we do not drill it, we find some other form or way to develop that property.

On a 40-acre proration unit development, the initial investment per well would be $200,000, the same as the previous investment. The gross reserves would be 105,000 barrels of oil. The net reserve would be 91,875 barrels of oil. The value of that net oil less the overhead and taxes would be $237,956. Less your investment and eleven-year lease operating expenses of $244,000, indicates a loss per well of $6,044. In order for 40-acre development to break even -- in order to break even on 40-acre development, the recovery per well would have to be 108,000 barrels of oil. That's to break even. Now, we realize that these are average figures; these are the economics that we have to look at before we go into an area to do exploration work or development, and we feel that a 40-acre development is typical of the rate of return and profit that -- or loss -- that would be obtained on development on 40 acres.

Q Mr. Lawrence, this is the identical calculation which was, in fact, made prior to the drilling of each well which Phillips Petroleum Company has drilled in the field, is that correct?

A That's right.

Q And these are the figures on which management actually decided whether a well will or will not be drilled, is that correct?

A That's correct.

MR. MERONEY: And you have used the same calculations in all cases which were used in each individual well, calculations prior to the drilling of each well, is that correct?

A That is correct, yes, sir.

MR. MERONEY: Thank you.

Q (By Mr. Spann) This actual Exhibit was prepared under your direction or supervision or by yourself, is that correct?

A It was prepared under my supervision.

MR. SPANN: I would like to move the admission into evidence of Exhibit No. 3.

MR. PORTER: Without objection, Exhibit 3 will be admitted.

(Whereupon, Phillips' Exhibit No. 3 was received in evidence.)

MR. SPANN: I believe that's all we have of Mr. Lawrence.

MR. PORTER: Does anyone have a question of Mr. Lawrence?

CROSS EXAMINATION

BY MR. WHITE:

Q Mr. Lawrence, I note this Exhibit 1, your structure map, was prepared May 7th, 1959, is that correct?

A That was the date that the first structure map was prepared at the previous hearing. I used the same base plat, May 7th,

yes, that would be -- that would be the date, yes, sir, that's right. I think perhaps the draftsman forgot to take the date off.

Q Now, you were present and testified at the last hearing in this case, I believe it was Case No. 1598?

A Yes, sir.

Q And you explained the structural map then, did you not?

A Yes, sir.

Q What differences are there, if any, between this structural map and your former Exhibit?

A Addition of Well No. 6, Ranger No. 6 as a completed producer. The location of the J. C. Barnes No. 1 Humble State, location of the Tidewater No. 1 Case State, both those aforementioned wells are located in Section 27.

Q Did you change any of the contour lines?

A Very little.

Q You say very little?

A Yes, sir.

Q Mr. Lawrence, which ones were changed?

A I believe we missed the top on the West Ranger Unit No. 6 by approximately 19 feet, and we moved that contour a small amount.

Q Now, this Exhibit shows a number of operators in the field other than Phillips. Approximately how many operators are there?

A Well, up until just here recently, operating the unit was Phillips-Texas and Pacific and Gordon Cone, they had been the only operators. Recent development has indicated that J. C. Barnes would be an operator, and in all probability Tidewater.

Q How about Humble?

A Humble does not have any producing wells in the field. Their acreage in Section 22, I believe, expired.

Q And the operator, Thagett, is he one?

A Quite possibly, yes. His locations are in Section 28. I think they would be classified as field exploratory wells. From what we know of the area, we feel they have an awful good chance to produce.

Q And none of these operators have joined in this application, have they?

A Well, there really is no producing operator other than Phillips, Texas and Pacific and Gordon Cone.

Q The answer to my question is no?

A At present, yes, sir.

MR. SPANN: I would like the record to show that Mr. White's question assumed the facts not in evidence. He referred to them as operators and not potentialled operators, as was testified to by Mr. Lawrence.

Q (By Mr. White) Has any potential operator joined in the application?

A Well, we have conversed with both Mr. Barnes and Tide-

water, and verbally they have expressed desires to me for 80-acre spacing.

Q The answer to my question is no?

A Which question?

Q The last question. Has any pctential operator joined in your application?

A They have not joined actively. They have indicated that they would go on 80-acre spacing.

Q Now, referring to your structure map again, how -- will you explain how you predicted your contours beyond your control points?

A How we predicted our contours beyond our control points?

Q Yes, sir.

Q Do you have reference to any particular area, sir?

A No, I would just like to know.

Q Well, have we done that in any case?

Q Well, you have your contour lines here, and I am asking you how you predicted them from your control points, which would be from your producing wells?

A Well, I mean -- I don't quite understand your question, Mr. White. Do you have reference to any particular area where we did that?

Q Well, let's take over on the east flank.

A All right. In other words, your question is, how would

we know?

Q How did you establish your water-oil contact line?

A We established our water-oil contact from Phillips' West Ranger Unit Well No. 2, located in --

Q And the aerial extent?

A Let me get to the point here how we established it. We established our oil-water contact from West Ranger Unit Well No. 2, located in the NW to the NW of Section 5.In that particular well we made a production test from 10361 to 10371. After acidizing with five hundred gallons, we swabbed 50 gallons of salt water in 12 hours. We subsequently squeezed those perforations,plugged back,and completed higher in the pay zone.

Q Now, directing your attention to your structure map, would not the Cone Well No. 1 appear to be in a good structural position?

A As I stated before, this is a combination stratagraphic and structural trap. Gordon Cone Well No. 1, the upper portion of the pay zone, had shaled out. He did not have any lime section until he was below the gas, or the oil-water contact.

Q But based on your structural map, would that appear to be in a good structural position, the Cone Well No. 1?

A Structurally, it is approximately 20 feet lower than Well No. 2. It is for all practical purposes the lowest well in the field area. I would not say that was an advantageous structural position.

Q What was the last part of your answer, please?

A I would not say that that was an advantageous structural position.

Q Well now, let's refer to the Barnes Well. Now, that was two feet lower than the Cone Well, was it not?

A That is correct.

Q So that would be in a less desirable structural position, presumably, than from what you say, correct?

A Not necessarily, because in these type of structures, and as you go east, your pay zone, as indicated on the Gordon Well, tends to shale up. In going in a southwesterly direction, the J. C. Barnes Well had the porosity development in the upper portion.

Q But it is lower than the Cone Well, is that correct, Cone Well No. 1?

A Well, by sample analysis, I would say it was approximately flat.

Q And one is a dry hole and another one is a producer?

A Well, this well is not a producer yet. It indicated that it would produce.

Q Now, would you say that there is a permeability barrier as to the Cone Well No. 1?

A How do you mean, a permeability barrier? Are you saying then -- Repeat your question. I didn't quite understand it.

Q Is there a permeability barrier, in your opinion, in the NW/4 of the SW/4?

A Well, the --

MR. UTZ: Section 24.

MR. PORTER: Mr. White, do you have reference to Section 24?

MR. WHITE: Yes, sir, Section 24.

A Your question is, is there a permeability barrier surrounding the Gordon Cone Well No. 1?

Q (By Mr. White) Yes, sir.

A The pay zone had principally shaled out. That pay zone was drill stem tested from 10357 to 10397. The well -- the tool was opened one hour and five minutes, recovery was 1840 feet of water blanket plus 30 feet of drilling mud. On the next test, from 10346 to 10433, the tool was opened one hour. The recovery was 1840 feet of water blanket, plus 89 feet of salt water plus ten feet of drilling mud, with no shoe. I would say from that it indicated the pay zone had shaled up although there was some porosity in the lower limits which was below the water-oil contact.

Q Then would you say that there is evidence of permeability barriers in this pool?

A No, sir. In this local area, the difference between those two wells, the combination of a structurally low well, plus the fact that the upper member was shaled out, going to the east, I would say that was a condition limiting the field to the east, and namely, in Section 24.

Q Would you say that there are pinch outs in the

field?

A No, sir. We can correlate each identical section throughout all the wells that we have drilled to date.

Q Would you say that permeability --

A We can correlate the identical sections to Gordon Cone No. 1 with the exception that the upper member had shaled out, and due to the fact that it was structurally lower, the lower portion was below the water-oil contact, the porosity was there except that it was structurally low.

Q In regard to the Barnes Well, when did you examine the analysis of the Barnes Well?

A What do you mean analysis?

Q You stated on direct examination that you had examined the sample analysis of the Barnes Well No. 1.

A I personally did not, no, sir, but a geologist under my supervision had an opportunity to see the samples, and also see the operator's sample.

Q Then, your testimony is based upon what somebody else has told you?

A Based on what the geologist under my supervision reported to me.

Q Mr. Lawrence, in your opinion, is there any evidence of zoning of the net effect pay within the net gross sections?

A Will you repeat that, sir?

Q Is there any evidence of zoning of net effective pay

within the gross pay sections?

A No, sir. In each well drilled, we've correlated -- Just take, for instance, these three, four wells we have on the cross section. We can detect the same porosity development in each of the wells drilled.

Q In your opinion, is there any evidence that a competent barrier exists between the zones and that these barriers are of sufficient aerial extent to cause poor pressure communication between the zones?

A No, sir, there is no indication of zoning within the pay zone.

Q Is there any evidence that some of these zones are restricted in aerial extent within the gross pay section?

A Well, this field is, shall we say, in the early stage of development on the wells, and information that we have to date, they do not indicate that there is, shall we say, a limited aerial extent. On the information that we have so far, we have detected this upper zone in all of our wells, and we have no reason to believe that there is any impermeable barrier or anything that you mentioned.

Q Now, your statement in regard to my question only has reference to the upper zone, is that correct?

A I am speaking of the upper -- I am speaking of the Ranger Lake pay zone period. That would include everything in the Ranger Lake pay.

Q How about the lower zones?

A You mean the lower portion of pay zones?

Q Yes.

A Porosity development in the lower portion appears to be constant, it is in all wells. It is limited, however, by this oil-water contact.

Q In reference to your Exhibit No. 2, do your logs show a uniform permeability?

A The logs that we have used in the cross section indicate no porosity as yet. The oil industry has not devised a tool to measure permeability.

Q What is the variation of porosity?

A You mean by that, in percentage value?

Q Or in milladarcies?

A Porosity is in percentage.

Q Percent?

A Your question is variance in percent in the various wells?

Q Yes.

A I do not have each well tabulated. I do not have the data on each. At the time of completion, we analyzed each well. To the best of my recollection, I can give you an average porosity value, if that will help you. Would that be of value?

Q You don't have the actual figure as to each well?

A No, sir. I have average porosity values now.

Q Can you give us the maximum and minumum range from

which you worked out the average?

A Yes, sir, I can give you approximate values on that. The porosity will vary from 6 percent to as high as, say, 13 or 14 percent. We feel that an average porosity of 9 to 10 percent is valid.

Q Now, referring to your Exhibit 3, you state the net value of the oil as being $2.85?

A Yes, sir.

Q Is it not a fact that this oil is selling for $3.01 a barrel?

A I believe it is, yes, sir. Now, our $2.85, it's an average with our company, and most companies, the geological department justifies the drilling of the well, and we like to use an average value for that oil. It perhaps could be higher, but that was the value that we used in justifying the wells already in the field. I realize that the value of oil may fluctuate slightly.

Q Well then, your figure of $2.85 is a figure that your company picked out, and, in fact, they are collecting $3.01, is that correct?

A Yes, sir, I believe that's the going price now.

Q If you figured this out at $3.09, you probably would wipe out your loss?

A Approximately. You might wipe out that $6,000, yes, but if you are going to just break even on drilling a well, why drill a well? I mean --

Q Well, can you answer, why did you use $2.85 and present it to the Commission? Why didn't you advise them that the actual sale of this oil was $3.01, and that you are using that figure?

A I believe our engineering witness is going to get into that, sir. The $2.85 was the figure that we used because it was used in justifying previous wells.

Q Now, you state that the gross reserves as being 105,000 barrels of oil?

A Yes, sir.

Q What method did you use in your calculation?

A Volumetric calculation.

Q And can you give us the figures and how you arrived at that?

A I don't have the exact figures with me, no, sir. I believe our engineering witness will get into the volumetric calculation, part of it.

Q Can you give us the estimated or the actual cost of each of your six wells, and what your net pay is as to each, or ultimate recovery that you expect?

A Well,the ultimate recovery that we anticipate to get from each well is this 210,000 as total cost. Our engineering witness will have those.

Q Well now, by that you mean that all of your wells are exactly the same caliber?

A No, sir, some of the wells will produce more than 210. Some of them will produce a lot less.

Q This, again, is an average?

A Yes. We are talking about average. That's the only values we feel are valid because that's what you have to look at to develop the field.

Q Did you figure just the net average pay of the upper zone, or did you take all three zones into consideration?

A We are looking at one pay zone, Mr. White. We took the entire pay section.

Q You were present at the last hearing, were you not?

A Yes, sir.

Q And you were present when Mr. Bohan --

A W. R. Bohan.

Q -- testified before the Commission?

A Yes, sir.

Q You will recall that Mr. Nutter asked him this question: "Would it be economical to drill two wells on 80 acres in this pool?" And Mr. Bohan answered: "Yes, I think it would be?"

MR. SPANN: If the Commission please, I think in all fairness to this witness, it should be pointed out that that same witness was recalled the next morning, and --

MR. WHITE: Let me finish my question first.

Q (By Mr. White) Do you dispute Mr. Bohan's statement?

MR. SPANN: Well now, if the Commission please, I

again --

MR. WHITE: I am asking him for his opinion.

MR. SPANN: He has already disputed it, but I don't know whether Mr. Lawrence recalls that this witness was recalled the next day, and for the specific purpose of changing that testimony. I mean he went into why he made the statement initially, and that his opinion was now no and why it was. Now, I think that if Mr. White is going to propound that question to Mr. Lawrence, he ought to give Mr. Lawrence the benefit of the entire testimony on the point.

MR. WHITE: I am merely asking whether or not the witness agrees with that particular statement made by Mr. Bohan.

MR. PAYNE: Made on the first day of the testimony?

MR. WHITE: Yes, sir.

MR. SPANN: I would interject this. He has already disagreed with it by his Exhibits and testimony from Exhibit 3.

MR. PORTER: The record will show that, Mr. Spann. Let him answer this question as to whether he disagrees with that statement, then he can ask him if he disagrees with the second statement.

A Well, would you repeat your first statement there, Mr. White?

Q Mr. Nutter asked, "Would it be economical to drill two wells on 80 acres on this pool." Mr. Bohan's statement or answer was, "Yes, sir, I think that it would be." Now, I am asking

you whether or not you agree with Mr. Bohan's statement?

A I believe that Mr. Bohan did correct the statement.

Q I am asking you whether you agreed with him, not whether he corrected it?

A I do not agree with him.

MR. WHITE: Very well. That's all I have.

MR. SPANN: May I, for the record, ask one question on redirect examination here on this point.

MR. PORTER: Yes, sir.

REDIRECT EXAMINATION

BY MR. SPANN:

Q For the record, and referring to the transcript of the testimony of Mr. Bohan, I'll ask you if you recall Mr. Bohan being recalled the next morning to testify on one point?

A Yes, sir.

Q And do you remember that this question --

MR. WHITE: I would like to ask what the purpose of question is?

MR. SPANN: To give to the Commission, and for the record, the entire testimony of Mr. Bohan on this point, since you --

MR. WHITE: I didn't ask him whether he agreed with any other statement, I asked him whether he agreed with that particular statement made by Mr. Bohan. It is immaterial whether he corrected it or not, I do not care, that's immaterial to this case;

I merely asked the witness whether he agreed with him, and he said he didn't.

MR. PAYNE: Mr. Spann, would you like to incorporate the record of the previous case into this case?

MR. SPANN: No, sir, I just merely wanted to put into the record the complete testimony of Mr. Bohan on this point, since Mr. White has put a portion of it in the record.

MR. WHITE: I object --

MR. SPANN: No matter how he did it, he did it.

MR. WHITE: I object to any part of his testimony being incorporated in this case because he is not here subject to cross examination.

MR: SPANN: He opened it up, I didn't.

MR. PORTER: Mr. White, you asked the question as to whether or not he agreed with that particular statement, and he answered it.

MR. WHITE: Yes, sir.

MR. PORTER: Mr. Spann has asked permission to ask the same question concerning a later statement.

MR. WHITE: As I understand, he wants to incorporate part of the record, not whether or not this witness agrees with him.

MR. PORTER: No, I believe he said he does not wish to.

MR. SPANN: I want to find out if he agrees --

MR. WHITE: That is perfectly all right.

MR. PORTER: Mr. Spann, would you rephrase your question,

or state it again, please. I believe we have lost track of what it was.

Q (By Mr. Spann) Mr. Lawrence, I believe you testified that you were present the next morning on February the 20th, 1959, when Mr. Bohan was recalled for further testimony, is that correct?

A Yes, sir.

Q All right, do you remember these questions being asked and these answers being given?

"Question: Will you state your name, please?"

"Answer: W. R. Bohan."

"Question: You testified in Docket Number 1598?"

"Answer: Yes, sir, I did."

"Question: There was an item in your testimony you desire to correct, is that true?"

"Answer: Yes, sir, that is true."

"Question: I wish you would proceed, please."

"Answer: Thank you. Yesterday afternoon on testifying on the Ranger Lake Pennsylvanian Pool, on cross examination I was asked the question as to the reasons whether or not it would be feasible or possible for an oil company to drill on 40-acre spacing. In answer to that question, I made a quick mental calculation of the reserves, multiplying the estimated recovery factor by the original oil in place, but I used the original oil in place under the 80-acre tract, rather than a 40-acre tract, which of course doubles the reserves and would change the answer to my question from yes to no."

From yesterday to now, do you agree with the answer that Mr. Bohan gave when he was recalled for questioning, and which answer I just read to you?

A Yes, sir.

MR. SPANN: That's all.

MR. WHITE: I have nothing further.

QUESTIONS BY MR. PAYNE:

Q Mr. Lawrence, referring to your Exhibit Number 3 -- well, first let me ask you this: Do you feel that you will get as much ultimate recovery developing this pool on 80-acres as on 40, substantially the same amount of oil?

A Yes, sir.

Q Now, in your Exhibit 3, the first portion of that I believe is calculated on the basis of the present allowable, is that correct, this 163 barrels of oil per day?

A Yes, sir, I believe it is. It is an average 35-barrel per day unit.

Q And the payout on that basis is 18 months, is that right?

A Yes, sir, that's correct.

Q Now, do you consider an 18-months payout a reasonable period?

A Yes, sir.

Q Now, this unit is being developed on 80-acres now,

is it not?

A Yes, sir.

Q So that whether the Commission established 80-acre spacing or not, you would still be paying these wells out in 18 months, is that correct?

A On 40-acre units?

Q Yes, sir. Well, 80-acre development with a 40-acre allowable?

A Let's see, now, 80-acre development with 40-acre allowable --

Q Like it is now.

A -- if it were on 40-acres --

Q Under present circumstances, you are paying these wells out in 18 months, are you not?

A Yes, sir, that's correct.

Q So that if the Commission, if the Commission went to 80-acre spacing for this pool, you would pay them out in, oh, some 12 months, is that right?

A Oh, I don't think it would quite reduce it that much, but it would increase the payout time; now, this is assuming that the well will actually make that many barrels of oil every day for the full 18 months.

Q Well, now, in view of the fact that the unit area is being developed on 80-acre spacing, why do you feel that, economically speaking, Phillips Petroleum Company needs 80-acre allowables,

since they are paying the wells out in 18 months anyway?

A Well, if you have 80-acre spacing, of course it follows that you would have an 80-acre allowable. Our primary reason in attempting to secure 80-acre spacing is to eliminate the drilling of unnecessary wells.

MR. WHITE: May I ask a question at this point? Is this case concerned with 80-acre allowables? I believe the Notice and the Petition Application itself is limited to 80-acre spacing, and not allowables.

MR. PAYNE: Well, it is 80-acre proration units, Mr. White, and as Mr. Lawrence says, ordinarily it would follow, if you went to 80-acre proration units, you would get an 80-acre allowable. However, we have had applications in the past where they asked for 80-acre spacing with 40-acre allowable.

MR. WHITE: Is there anything in their Petition Application touching upon 80-acre allowables?

MR. SPANN: We contend that it follows from the establishment of 80-acre prorations.

MR. PAYNE: Mr. Lawrence, referring now to your application in this case, it is my understanding that you ask that 80-acre proration units or spacing be established in considerable additional acreage other than the presently defined limits of the Ranger Lake Pool, is that correct?

A I believe that was on our first application; as I remember the application that we now have, I do not believe it

encompasses that same area, as far as extending the pool limits, does it?

MR. PAYNE: Well, it was somewhat ambiguous, I thought, that's why I am trying to pin it down. Referring to Paragraph 4 of the application, it states as follows:

"It now appears from the information obtained from the drilling completion and production of the aforesaid wells, that the Pennsylvania formation will probably be productive of oil in at least the West Half of the West Half of Section 13, all of 14, 15, 22, 23, 26, and 27, West Half of the Northwest Quarter and the Southwest Quarter of the Southwest Quarter of 24, West Half of the West Half of 25, Township 12 South, Range 34 East, Lea County, New Mexico."

Now, are you asking in this application that this acreage, that 80-acre proration units be established in this acreage most of which is, well, I guess all of which is outside the presently defined limits of the Pool?

A Well, sir, I believe -- correct me on this if I am wrong, sir, but does not the Commission consider any well drilled within the confines of one mile of the Ranger Lake Field to be under the rules of that particular field?

Q (By Mr. Payne) Generally that is correct, sir.

A I think that's primarily what the application has in mind, sir.

Q Now, do you have any evidence that Section 14, 15, 22,

and 27, is productive of oil from the Ranger Lake Pool?

A Well, yes, sir. The South Half of Section 27 was pretty well proven productive on the drill stem test on the J. C. Barnes Humble State located in the Southeast Quarter of the Southeast Quarter of Section 27. As I stated before, the Tidewater is drilling their Number 1 Case State on the Northeast Quarter of the Northeast Quarter of 27; they are not at the point where they encountered the pay yet, but it is a company that believes it will be productive. They have also staked locations in Section 15, which somewhat substantiates the application that they feel it is productive, although the well is not in the pay zone, it is within the radius of one mile of the field.

Q Then you are not actually asking that the boundaries of the pool be extended?

A Other than that one mile, that is my understanding of the application, yes, sir.

Q Mr. Lawrence, how did you arrive at your Lease Expenses on your initial expense figure?

A Let's see, that's the lease, 7-year's lease, operating expenses and initial investment, total $244,000.00. Now, two hundred thousand of course is taken up by the drilling of that well; the $44,000.00 takes care of the installation, surface installation, pumps, the installation of a pump unit, and also the lease operating costs, average lease operating cost, the cost to your pumper and roughnecks, and various sundry items to initially

produce that well.

Q You didn't include that $200,000.00 twice?

A No, sir, the $200,000.00 is what you are paying to get the well drilled, and then we include, like I say, seven years lease operating expenses, and initial investment; the initial investment is $200,000.00, the $44,000 takes care of the unit, paying the pumper, roughnecks, mechanics, and perhaps a workover on the well during the life of the well.

Q Are you familiar with the unit agreement that deals with this acreage?

A I think I am fairly familiar, yes, sir.

Q Well, here is what I want to know, does it also provide that the procedure to be followed in the unit will also be followed within the confines of one mile therefrom?

A Well, the existing unit, West Ranger Unit, covers Section 25 and 26, and the Northwest Quarter of Section 25. Now, I am quite sure that the unit does not take into consideration what happens outside the unit.

Q In other words, that one mile facet would not apply to the unit agreement?

A No, sir. No, sir.

MR. PAYNE: That's all, thank you.

MR. PORTER: Mr. Lawrence, I believe you indicated wells drilling in the North Half of Section 26, that would be the Northwest Quarter of the Northeast Quarter of 26, and then there

is Tidwater 1-K; do you know the status of those wells at the present time?

A Yes, sir, our Phillips and Texas-Pacific Number 5 West Ranger, located in the Northwest Quarter of the Northeast Quarter of Section 26 is currently drilling below, approximately, I would say today that it should be around 4,000 feet, approximately; and the Tidewater well, notably the 1-K State, located in the Northeast of the Northeast of Section 27, I believe they have moved in a rotary on that well now, it should be drilling approximately, I will say, below 5,000 feet, I could be off on that one by a small amount.

MR. PORTER: How long does it take to drill a well in this area, ordinarily?

A Oh, drilled and completed, we allow approximately two months; two to two and a quarter months, approximately.

MR. PORTER: Thank you. Mr. Fischer.

QUESTIONS BY MR. FISCHER:

Q Mr. Lawrence, would you give us your definition of a Stratographic trap? I believe you said this was a stratographic and structural trap?

A Yes, sir, we feel that the Ranger Lake Field is a combination structural and stratographic trap. Now, the stratographic portion of that is dependent on your dolmite buildup; as we progress to the east, the pay zone is shaled out of the upper portion of it; the lower is still there, however, it is below the

water. This apparently is a band of porosity, notably, on shall we say a Northeast-Southwest direction wherein the dolmite is developed in a band, so to speak and to draw it diagramatically.

Q And in line with that, possibly, could you tell us which way, where the sea was, or where the beachline was in that case, please?

A Yes, sir. I will start off by saying that regionally this is in Lea-Chaves Basin Area, the Hightower Field is approximately, oh, I'll say eight miles to the East, and there is a big fault separating that Hightower from this area. Now, when the Pennsylvanian seas progressed in this area, there were Devonian highs scattered throughout this area, and Mississippian, and during the Pennsylvanian time when the seas came in, they progressed in and out. Now, that accounts for, we feel, the stratographic trapping of it; at some point the seas were, oh, stationary at some age covering a band of porosity within this Ranger Lake area, allowing dolmitization.

Q Mr. Lawrence, excuse me just one minute. You are indicating on the map that the sea was transgressing and regressing in a Northwest-Southeast way?

A Yes, sir, I feel that is apparent by the production we have, Pennsylvanian production in the four lakes, Pennsylvanian production in the Ranger Lakes, and the Pennsylvanian production in the Sprague area, all Cisco age.

Q As to your definition of a stratographic trap --

A A Stratigraphic Trap is a porosity body that is wedged out either by lack of deposits, either updip or downdip from the oil accumulation; it does not allow the oil to accumulate any higher, and forces entrapment of the oil.

Q Isn't permeability derived from porosity?

A Well, sir, you can have porosity but no permeability; if you have permeability, you have to have porosity.

Q Well, then, in answer to Mr. White's question, would it not be true then that there is a good possiblity, in your opinion, that there are permeability barriers, porosity barriers?

A No, sir; let's look at it this way. When we look at any electric log we are just looking at a very small portion of that pay zone; all through this --well, here is 36 feet, and this well here is 13, a hundred feet up that may increase and for that reason, and in studying the field and the general area, I don't feel that there is a danger of permeability barrier between two wells; I think that fact is also borne out by our engineering and production data which will be put on at a later date.

Q Is it true that in a dolmite or limestone field, that permeability is really no indication?

A Indication of what, sir, indication of production?

Q Well, just because you -- say you have a 9% porosity, for instance --

A Average?

Q -- in a dolmite or limestone field, it could be that

it would most probably be that you would have to be from ranges of zero to probably a hundred percent porosity?

A Well, from sample analysis, and the one core that was taken in the field, the Ranger Lake pay zones exhibits both vuglar and some fractured porosity, so your statement that there is some, probably some vug in there where we have a hundred percent porosity, and there is some intercrested zones where it is perhaps quite a bit lower than that; but from the information we have, logs and core analysis, that is the best we could come up with, an average nine percent. Now, there are wells that are quite a bit higher.

Q Surely, and some lower ones?

A Yes, sir.

Q Well, then your range of porosity was 6 percent, to 12, to 14 --

A That is correct. I do not recall the exact porosity calculation at the completion of each well, but that's to the best of my recollection, yes.

Q Are there any formulas put out, or used, by the logging companies whereby you can determine from these electric logs permeability from porosity?

A You can estimate it; I think your best indication of permeability is perhaps your filter buildup as is shown on your microcaliper. That, of course, is just an indication, I do not believe it is a quantitative measurement of permeability.

MR. FISCHER: That's all.

MR. PORTER: Anyone else have a question?

MR. PAYNE: Mr. Lawrence, I just want to ask one more question. Are lease expenses the same on 40-acre development as on 80-acre development?

A Well, I would say that on 40-acre development, your lease operative cost would be increased, you would have more work for that pumper to do, you would have more workovers to perform, a lot more pumping units, so I would say it would be increased on 40-acres.

MR. PAYNE: I noticed you had them listed the same.

A Yes, sir, we used the 40-acre development analysis mainly by comparison, I mean for a comparison, to show that although we in our analysis show a loss, supposing we did break even, it still wouldn't be a profitable venture; supposing we made $10,000.00, it still wouldn't be a profitable venture. You could put that $200,000.00 in the bank at three percent, and you would make more money that way. We made that analysis mainly for comparison, sir.

MR. PAYNE: Thank you.

MR. PORTER: We will have a very short recess.

(Recess.)

MR. PORTER: The meeting will come to order, please. Mr. White, I believe you have a question?

RECROSS EXAMINATION

BY MR. WHITE:

Q Mr. Lawrence, do you have any actual costs for any one of your six wells?

A Our engineering witness does, sir, he has exact detailed costs.

Q You stated that there were wells being drilled, two wells in Section 28, and one in Section 15, is that correct?

A There have been locations, I believe, two or possibly three locations staked in Section 28; there has been one location staked in Section 15. We are drilling a well in Section 26; Tidewater is drilling a well in Section 27.

Q You don't know whether the actual drilling has been commenced in Section 28 or 15?

A The locations have just been announced the first part of this week, sir. I just imagine it does have a spudder or some type of equipment on the lease.

MR. WHITE: That's all I have.

MR. PORTER: Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Mr. Lawrence, what is the status of the well up there in Section 9 indicated on your exhibit as, that was the Sunray-Midcontinent East Bagley Number 1, I believe it is now, and a one dead producer.

A That well, Mr. Nutter, was the Sunray-Midcontinent Number 1, East Bagley Unit, and it is currently -- no, sir, I believe it still is currently producing.

Q Is that well completed in the same interval of the Penn that these wells here in the Ranger Lake area are completed in?

A Yes, sir, approximately, it is in the Penn.

Q Do you know what the top of the Penn, the top of this equivalent pay is, and the thickness?

A Yes, sir, I have it right here. I stand corrected on that, Mr. Nutter. Looking at a newer plat here, that well is abandoned; the top of the Ranger Lake pay zone was encountered at a minus 6,061.

Q And it was completed in the same interval of pay that these wells in Ranger Lake unit are completed?

A Approximately, yes, sir.

Q Mr. Lawrence, I note in examination here in your cross section exhibit, that there is quite a bit of variation not only in the net feet of pay zones, but in the gross pay section. As a matter of fact, well Number 4 has 57 feet of gross pay sand, approximately, and 13 feet of net; when well Number 2 has 23 feet of gross sand and 18 feet of net, what is the principal reason for this large variation?

A Well, sir, well Number 4 is structurally a high well, consequently it has a larger oil column as indicated on the cross section. Now, the line, the line, Ranger Lake pay zone, the gross section encountered in that well was approximately a hundred and ten feet, covering the overall section. Now, the upper development

in that particular well is indicated by the log, it was approximately a half of what the upper development was in well Number 3. Now, you mentioned well Number 2, was it, sir?

Q Yes,sir.

A Well, Number 2 is structurally a low well, having approximately 75 feet of gross section. Now, the upper section, the upper development in the pay zone was very well developed having 18 feet of net development in the upper zone, upper portion.

Q Well, now, leaving out the lower section there, taking about what you have identified as the upper porosity in your exhibit, how do you account for the difference in the percentage of that gross upper development that has net pay sand in it, because as I pointed out before, in the Number 4 well you got 13 feet out of about 57 --

A Yes.

Q -- and in the Number 2 you got 18 feet out of about 23.

A Yes, sir. Now, your question is how do you account for that difference?

Q Yes, sir.

A Number 1, I feel -- one of the reasons for that is structure, I feel, I mean the fact that Number 4 well did have a larger section than the Number 2 well, as far as the net section, this is a combination, as I said, stratographic and structural trap; and right at the portion where the Number 4 well was drilled,

the upper porosity was just not as well developed as it was in the area of well Number 2. However, there is this factor to it, that although the log only shows 13 feet of net porosity development, perhaps a hundred feet from the well bore we may have had much more.

Q Now, you stated that you felt that the pay section in the Gordon M. Cone Number 1 well had been shaled out, that is correct?

A The upper portion, yes, sir.

Q Was any attempt made to complete that well in the lower section also?

A No, sir; as quoted from that drill stem test, they did test water, 89 feet of salt water.

Q Well, now, Mr. Cone went down to the South Half of that 80-acre tract and drilled a producing well?

A Yes, sir.

Q So there must be a variation in permeability and porosity from the location of the Number 1 and Number 2?

A There is always variance in structure, approximately 20 feet, 18 feet; I might add that the pay section also indicated that it was thin.

Q Well, according to your contour lines now, you got a substantial variation in structure in the Phillips acreage, comprising the West Half of the Northwest Quarter of Section 25, do you think there might be a possibility of a variation in permeability and porosity there?

A In Section 25?

Q Yes, sir.

A Your question then, let me see if I understand your question, Mr. Nutter. Is your question then, do I feel that there is the possibility that the East Half of the Northwest Quarter of Section 25 might not be productive, is that your question?

Q Yes, sir.

A In view of the control that we have, that is a possibility, that the East Half of that Northwest Quarter could not be productive, there is that possibility in light of Gordon Cone's well, as well as structure.

Q How about the Northwest Quarter of the Northwest Quarter of Section 25?

A I don't like -- I feel that, this is my opinion, that there is a drillable location in the Southwest Quarter of Section 25, in the Northwest of the Southwest, 25, right there.

Q How about the Southwest of the Northwest of 25? Perhaps I gave you the wrong location.

A The Southwest of --

Q Of the Northwest Quarter of Section 25?

A I see.

Q That would be directly south of where the Number 2 is located.

A Southwest of the Northwest of Section 25, I think, feel that is also a drillable location.

Q Isn't it located structurally in the same position that the Gordon Cone is located?

A Yes, but I feel that in view of the pay section encountered in the Number 2 well, as well as the pay section encountered in the J. C. Barnes Humble State Section 27, correlating those sections I feel that we would have the upper zone developed.

Q Well, now, let's refer to another 80-acre tract, the 80 acres being the E½ of the SE¼ of Section 23.

A The East Half of the Southeast --

Q Yes, sir, that's the 80-acre tract --

A The Number 1 well is located --

Q -- assuming that the tract would be dedicated North and South.

A Your question is, do I feel there is another drillable location there?

Q Yes, sir.

A In light of structure, I feel, and also the net pay section, gross pay section encountered in wells 1 and 3, we could anticipate a drillable location in the location you mentioned.

MR. MORGAN: Northeast of the Southeast?

A Northeast of the Southeast.

Q (By Mr. Nutter) I believe you stated that your engineering witness would have detailed cost of the drilling of these wells?

A You realize now, I base my opinion as to the drillable

locations as to my knowledge of the area and the construction of isopach studies that we have done in the area.

Q He will also have the calculations and the figures upon which you base the reserves of 105,000 barrels per 40-acre tract?

A He will have the figures upon which his department bases the reserves on; now, they are very much in line, yes, sir.

Q I believe you stated that the range of this, the porosity in this area, was 6 --

A I would say between 6 to 14.

Q -- with an average of 9?

A An average of 9 to 10.

Q Is that a weighted average, Mr. Lawrence?

A That's an average, arithmetic average of quantitative electric log analysis correlated to the one core that we have; we are limited in this respect that the upper member was not cored; in the one well which did core, the regular pay zone, we started coring too low, so as to the exact porosity in that, I only have the quantitative log analysis.

Q That's the average of one well that was cored?

A No; no, that is the average of all the wells in the field.

Q And it is based on the core from the one well?

A No, sir, it is based somewhat on that, we took a core on that particular well into the consideration, and then tried to

correct our quantitative analysis to that log, realizing that radioactive porosity will vary two or three percent sometimes; we try to correct to that by correlating to the core analysis.

Q You stated, Mr. Lawrence, that you were fairly familiar with the unit agreement for the Ranger Lake unit; do you know if that unit has any provision in it for the expansion of the unit area?

A No, sir, I am not that familiar with it; at one time I probably could have told you, but I have not had occasion to look over the unit agreement recently, and I couldn't say yes or no on that.

Q Do you know of any attempts having been made to expand the unit area?

A I believe one attempt was made by Mr. Cone to be included in the unit area.

Q Has Phillips Petroleum Company, or who is the other operator?

A Texas-Pacific.

Q Texas-Pacific, has either one of them made an attempt to expand the unit area to include additional acreage?

A No, sir, I don't believe any attempt has been made, to my knowledge.

MR. SPANN: May I interject, Mr. Nutter, we will be happy to furnish a copy of this unit agreement, if you care to have it.

MR. NUTTER: I think we probably have a copy of the Unit

Agreement, Mr. Spann. We don't happen to have one here.

MR. SPANN: If you don't have, and you need it, let us know.

MR. NUTTER: I am sure that we do, Mr. Spann. Thank you.

Q (By Mr. Nutter) Mr. Lawrence, what was the purpose of the Unit Agreement when the thing was formed? Was it not to drill a well to the Devonian formation --

A Yes, sir.

Q -- and that well was a dry hole?

A It was a dry hole in the Devonian.

Q And no other wells have been drilled to the Devonian?

A No, sir.

Q Normally, Mr. Lawrence, the Devonian structures that are encountered in Northeastern Lea County are smaller structures with steeply dipping plane --

A That's correct.

Q -- more than the Pennsylvanian?

A That's correct, the Pennsylvanian was a fill-in, a fill-in area that filled in over these highs.

Q Do you agree that more efficient operation of a pool is usually obtained by a unitized operation?

A Yes, sir, it is my opinion that by the pooling of resources, and the efficient method of one operator, he benefits by the opinion of another operator, I think that more efficient and better operations can be achieved, and the element of risk is

somewhat less in the drilling of an initial wildcat well.

Q And where this Unit Agreement was formed for the testing of the Devonian structure, which may have been a small structure with steeply dipping sides, and instead end up covering an area of a rather flat-Penn pool, it would seem that an expansion of the Unit Agreement would solve some of the difficulties here?

A Well, of course there are some very, very shallow Penn fields, and it was not until recent development in the area that it appeared that it was going to be a large field. We feel that of course unit operations taking other acreage into units is always a difficult problem to solve, at least we found it that way, and I don't know whether it would be any advantage taking any additional acreage or not.

Q Mr. Lawrence, you made one statement that in your opinion there is good communication in this pool, and that one well will drain 80 acres. Now, just what do you base that opinion on?

A I base that opinion on, it is a geological opinion, the first basis that I had is the correlativeness of the various beds, the sections in the Ranger Lake pay zone. The second basis that I have is sample analysis in the field indicating formations and lithology that lend itself to good communications, good communication between wells.

Q What do you actually know about the permeability in this reservoir, Mr. Lawrence?

A Permeability we have from the one core analysis,

and I believe the maximum measured permeability in that one core was 27 millidarcies; the upper section, however, was not cored, consequently we have no actual measured permeability in that upper section. From porosity, we feel that it may exceed that measured permeability of 27 millidarcies; we can estimate permeability to some extent from sample analysis, however, it is difficult, and it is just one geologist's opinion.

Q But you do feel that you have good permeability?

A Good permeability, yes, sir, in light of the fractures, the fractures that were indicated in that one core, as well as the vuglar porosity, and we feel that it would tend to lend itself towards good communication between wells.

Q You also stated, Mr. Lawrence, that you felt that wells that were drilled in this pool, some of them would recover more than the 105 barrels per 40-acre tract, and some considerably less?

A Yes, sir.

Q If permeability is good, why does this occur?

A Well, I think it would depend on the amount of net section that each well encounters; it depends to some extent upon the completion of the well. In other words, each well in the field will not recover a specified amount of oil. We also advocate structural position; some drilled in less advantageous position will redover less. So, in our analysis, we have tried to reach or arrive at an average recoverable.

Q Do you think that all, or actual reserves in place

under the various wells, will vary considerably, or is it rather uniform?

A Well, I feel it's -- I feel that the reserves are uniform, I mean, although wells may not recover that exact amount of oil because of their structural position and amount of net pay section encountered in the well.

Q Well, your Number 3 well has 33 feet of net, 36 feet of net sand; your Number 1 has 10 feet of net sand; you mean the reserves are the same in those two wells?

A Number 3 and Number 2?

Q Number 3 and Number 1, beg pardon.

A Number 3 well and Number 1 well --

Q 36 and 10. At the well bore this well showed 10 feet of net, and this well produced, had 36 feet of net.

A There again, I would say that the Number 3 well would in all probability recover a little more oil than the Number 1 well. However, the Number 1 well is the first well in the reservoir, and had an opportunity, chance to drain some of the oil that was in place under the Number 3; so I would say that well Number 3 actually may have a little more oil in place than Number 1, but the average, if averaged, all these things will come pretty close to what we had figured.

Q You say it would have a little more oil despite the fact that the Number 3 has 3 and 6/10ths --

A It would recover more oil, let's put it that way, yes,

in view of the structural position, as well as net pay section that appears in the well.

Q The Number 3 would recover more oil?

A Would ultimately recover more oil than the Number 1 well.

Q So some of these wells would have better opportunity of being out on 40-acres than would others?

A I think that's true in any field, yes sir. There again you are going to have some stickers in here to make up for that little extra that you will recover, and that's why we used an average figure.

Q Now, in your direct testimony, I think you stated where you may have only a small amount of net pay in a well, a hundred feet out that net pay may increase?

A That's always a possibility in any reservoir.

Q And it might decrease too?

A It might decrease, yes, sir.

MR. NUTTER: I believe that's all, thank you.

QUESTIONS BY MR. FISCHER:

Q Mr. Lawrence, the well in which you said you had your only core, did you get a chance to look at the drilling time on that well in that upper section?

A Through this upper portion?

Q Yes, sir.

A Yes, sir, there was, as I recall, a drilling break.

Q There was a drilling break in that upper section?

A Yes, sir.

Q What would it indicate to you?

A It would indicate a porous body, pay zone.

Q Would you venture an opinion as to, geologic opinion as to the amount of porosity in that upper section, as to the porosity in that lower--where you had the core, after having studied the core?

A You mean the value of the porosity?

Q Yes, sir.

A The well that was cored, I believe was well Number 2; yes, sir, that was well 2, yes, it is core well Number 2, cored the pay from 10313 to 28, 10328 to 73, 10373 to 94. The radioactive logs indicate the porosity in that upper portion that was not cored to be of a greater magnitude than that that was actually measured in the core analysis.

MR. PORTER: Anyone else have a question of the witness?

MR. PAYNE: One further question.

MR. PORTER: Mr. Payne.

QUESTIONS BY MR. PAYNE:

Q Mr. Lawrence, if I understand your application correctly, it is for 80-acre spacing, and the drilling of more than one well on the 80-acre dedicated acreage would be prohibited, is that correct, with the location in the center of the 80, with a

tolerance of 150 feet, I believe you propose?

A Is that it?

MR. SPANN: I believe that's what the application asked for, yes, sir.

Q (By Mr. Payne) You propose for it to be in the center of one of the two 40-acre tracts?

A That is correct.

Q But you would prohibit the drilling of the second well on the 80, is that right?

A Yes, sir, that would be my opinion.

MR. PAYNE: That is what the application asks, isn't it, Mr. Spann?

MR. SPANN: Well, of course I assume that if you wanted to drill an additional well, you would only have half an allowable if you wanted to do it under those circumstances, 40-acre allowable.

MR. PAYNE: In other words, you are asking for 80-acre proration units, rather 80-acre spacing --

MR. SPANN: We felt that followed from the application, yes, sir.

MR. PAYNE: Thank you.

MR. PORTER: Were you through with your questioning?

MR. PAYNE: Yes, sir.

MR. PORTER: Anyone else have a question?

MR. SPANN: If these gentlemen are through, I have a

couple of questions on redirect examination.

MR. UTZ: I have one question.

QUESTIONS BY MR. UTZ:

Q Mr. Lawrence, have you taken any micrologs on any of these wells?

A Yes, sir, I believe the first one or two wells had micrologs run on them; subsequent to that, we switched over the procedure of running gamma ray neutron log and combining it with a lateral log or microlateral log.

Q Would you make those logs available to us?

A Yes, sir, they will be available to you.

Q Will you please send us a copy of it?

A Of all the logs?

Q Yes, all the logs you have.

A Would you like me to send it to your office?

Q That will be fine.

REDIRECT EXAMINATION

BY MR. SPANN:

Q Mr. Lawrence, you testified that you felt there was a possibility that this field would be extended considerably as a result of further drilling; do you believe that temporary rules establishing 80-acre spacing in this area would encourage further development in the field?

A Yes, sir, I definitely do; I believe that permanent

rules would definitely enhance development and exploration in the area because operators would have a good chance of making a favorable recovery on their investment; temporary rules could possibly do the same thing.

Q Now, if these temporary rules are put into effect in this field as you have sought in your application for a period of one year, or until further order of the Commission, would there be additional evidence or information available at the end of that period which would perhaps confirm your conclusions you've made here?

A Yes, sir, there will be. We will have additional structural control; we will have additional reservoir control; from a geological standpoint we will have more wells into the pay zone wherein we will be able to correlate through the pay section.

Q But at least all the information available at this point indicates that one well will drain 80 acres, and this additional information, in your opinion, would merely confirm it?

A That's correct.

MR. SPANN: I believe that's all.

MR. PORTER: Anyone else have a question?

MR. WHITE: I have just one question, I want to clarify one thing.

RECROSS EXAMINATION

BY MR. WHITE:

Q Mr. Lawrence, in reference to your economics as to

the net pay, did you -- is this exhibit prepared as to the net pay applying only to that thaxed zone there where you have it thaxed?

A No, sir, it emcompasses the whole pay section.

MR. WHITE: That's all.

MR. PORTER: Anyone else have a question of the witness? He may be excused.

(Witness excused.)

MR. PORTER: Call the next witness, Mr. Spann.

MR. SPANN: Mr. B. W. Berthelot.

B. W. BERTHELOT

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

DIRECT EXAMINATION

BY MR. SPANN:

Q Would you state you name for the record, please?

A Byron W. Berthelot.

Q And by whom are you employed?

A Employed by Phillips Petroleum Company of Bartlesville, Oklahoma, but I am in Midland, Texas.

Q In what capacity?

A Division reservoir engineer.

Q Would you state briefly for the Commission, your educational background and your experience as a petroleum engineer?

A I am a graduate of the Agricultural and Mechanical

College of Texas, with a degree in Petroleum Engineering, and a degree in mechanical engineering, both issued in June 1948; entered the employ of Phillips Petroleum Company the same month and have been continuously employed since. The past nine years of that employment, have been doing reservoir work in a number of jobs of increasing responsibility and scope to my present position.

MR. SPANN: I would like to ask if Mr. Berthelot's qualifications as an engineer are acceptable?

MR. PORTER: The Commission will accept his qualifications.

Q (By Mr. Spann) Mr. Berthelot, have you had an occasion to study the Ranger Lake Penn Oil Pool, Lea County, New Mexico?

A I have.

Q And what sort of a study did you make of that pool?

A I made a sufficient study of that pool to determine the engineering aspects of the reservoir, and the capabilities of the wells, a general reservoir engineering study of the Ranger Lake Penn Field.

MR. SPANN: Would you mark this brochure, Mr. Reporter? The first page will be Exhibit 1, we have not -- or Exhibit 4, excuse me.

(Whereupon, Phillips' Exhibit No. 4 was marked for identification.)

Q (By Mr. Spann) Now, referring to Exhibit 4, will you explain that Exhibit to the Commission?

A That's a summary of the engineering features of the Ranger Lake Penn Field in Lea County, New Mexico. You want me to go into the specific --

Q Yes, sir, please.

A The normal features of such a summary include physical properties of the reservoir rock, and these have been analyzed; the approximate average porosity of 8.7 percent is taken from correlated neutron curves. Those neutron curves were adjusted to make them comparable with the core analysis data from the one core that has been taken in the field. The maximum measured permeability as recorded in that core analysis was 28 millidarcies; the permeability, the average permeability of the core analysis was 14 millidarcies. However, the over-all average would be considerably greater than that, I feel, as permeability shows a nominal relationship with porosity, and the porosity in the upper portions of the pay that we missed in the core were actually better, and we could anticipate a higher average permeability through the section. But the highest measured permeability was 28 millidarcies. Also in that core we have a measure of fluid saturation, the average connate water saturation being 25 percent of the porous space. I have also studied the structural features of the reservoir, they concur in all major aspects with those of the geological department of Phillips Petroleum Company that has been presented here. The original oil-water contact as defined by the production group by myself, is a minus 6210 feet subsea, taking into account two drill stem tests, the one in Phillips Petroleum and Texas-Pacific

well Number 2, and the second being in Gordon Cone well Number 1. That original oil-water contact has been well defined minus 6210, or minus 6211, I won't quibble about the foot.

The reservoir fluids as of right now, an undersaturated crude of 40 and 4/10th degrees API gravity; the estimated saturation pressure of the crude, 2250 pounds per square inch; and the initial formation volume factor of 1.409, that's reservoir barrel per stock tank barrel, that estimate estimated a saturation pressure would be 1.430 reservoir barrels per stock tank barrel. The solubility included solution gas, 754 cubic feet per barrel at initial conditions and at bubble point or at the saturation point.

The pressure and temperature of the reservoir, we will go into some detail on that in additional exhibits, specifically Number 6, 7, 8, and 9. The summary sheet here indicates an initial reservoir pressure of 3530, however, that was the first measurement; it is not the virgin reservoir pressure, but the first measurement of pressure, and was taken after the production of 7,500 barrels of oil from the Number 1 well, and indicates 3530 pounds at that particular point of reservoir depletion. Reservoir temperature 162 degrees, measured with a maximum recording thermometer in several instances of drill stem testing, and in bottom hole pressure measurements sometimes a maximum recording thermometer is included, and a hundred and sixty-two degrees is the formation temperature within reasonable engineering estimates. The pressure surveys that we will refer to in the future, were made with 48-hour shutin

periods, that's normally required pressure, and most of them were taken at that period of time. Productivity in the well varies from .793 to 1.553; that's the measure of barrels of production per day that can be expected per pound per square inch at the formation phase.

Statistically, we have accumulated production to 12-1-58, barrels of oil, 368,711; MCF of gas, 285,088, and no water.

On the next exhibit, why that has been extended to include production through the months of January and February 1959, but without the total; the approximate total being 450,000 barrels to date.

The number of producing wells is currently 6; as of the date this summary was made, there were 5. The state of depletion is in the early or development stage of depletion, and development to date has been staggered 80-acre development pattern.

To date the general reservor mechanics indicate production. The prime factor in the producing mechanism of the reservoir to date has been by fluid expansion from the pressure above the bubble point; down to the bubble point. The expansion of the fluid in the reservoir is the energy contributing in the oil to production. In the later life of the reservoir why it will undoubtedly be produced by solution gas drive, may or may not be aided by a partial water drive. To date there is no evidence of a water drive.

Q Now, would you have the next page marked as Exhibit 5, by the end of the brochure marked Exhibit 5, by the reporter.

(Whereupon, Phillips' Exhibit No. 5, was marked for identification.)

Q Referring to Exhibit 5, will you explain that to the Commission.

A Exhibit 5 is merely a recording of the oil production, gas production, monthly and accumulated through November of 1958, not accumulated beyond that date, and of the Gas-Oil Ratio as calculated from the oil production and the gas production by months through the Penn Field Ranger Lake, Lea County, New Mexico.

Q Now, referring to the next page of the brochure, I would like to have that marked Exhibit Number 6.

(Whereupon, Phillips' Exhibit No. 6, was marked for identification.)

Q Referring to Phillips' Exhibit 6, would you explain that to the Commission.

A Phillips' Exhibit 6 is a summary of the bottom hole pressure data that has been recorded to date in the Ranger Lake Penn Field of Lea County, New Mexico. It included six pressure determinations in Ranger Well Number 1, four pressure determinations in Ranger Number 2, four pressure determinations in Ranger 3, and 4, and a single pressure determination in Ranger Number 6. The important data on this page being the indicated initial pressure in well Number 1, 3530, taken some two months after completion of the well, and after its production of 7,500 barrels approximately from the reservoir.

The information on this exhibit is shown graphically on additional exhibits, and will be discussed further when we get to those.

Q How often do you take these tests, ordinarily?

A Ordinarily we take these tests semi-annually. There has been an increased frequency in this field as a result of hearings.

Q Well, now, if temporary rules for a period of one year are granted here, would you continue to take these tests so as to have the information available at the end of that period?

A We would certainly take the normal frequency of tests, based on 6-month intervals; there would be two additional pressure surveys within the field within a period of one year.

Q On each well, and of course on any additional wells that you might drill, is that correct?

A Yes, sir.

Q I would like the next page marked as Phillips' Exhibit Number 7.

(Whereupon, Phillips' Exhibit No. 7, was marked for identification.)

Q Referring to Exhibit 7, would you explain that to the Commission?

A Exhibit Number 7 is related to the Ranger Lease, the largest developed lease in the field to date; and it included the production from that lease and the cumulative production from the

lease taken from Phillips' lease operating statements, and it's available through the period of March 1959.

Q Now, referring to the next page, has that been marked Exhibit 8?

(Whereupon, Phillips' Exhibit No. 8, was marked for identification.)

A It has.

Q Referring to Exhibit 8, explain that to the Commission.

A Exhibit 8 is essentially the information contained in Exhibit Number 6, presented graphically. It shows the point of pressure measurement in the various wells with respect to time, and it shows a plot there of the bottom hole pressure versus the time of the pressure measurement.

(Whereupon Phillips' Exhibit No. 9, was marked for identification.)

Q Now, has your next exhibit been marked?

A It has. Actually, Exhibit Number 8 is an intermediate step in the preparation of the Exhibit Number 9. Exhibit Number 9 is a plot of the pressure production data versus cumulative lease production. In other words, Exhibit Number 8 shows the relationship with time, and from Exhibit Number 7 we have related those pressures to cumulative production; and then that's cross-plotted here on Exhibit Number 9, which shows the bottom hole pressure in those survey periods, and that pressure is indicated on this draft right here. We have cumulative lease production in barrels.

Now, this exhibit is perhaps the key exhibit of this brochure. It indicates the parallelism of the pressure decline history of four wells, Ranger Lease Number 1, 2, 3, 4, and one point there the initial pressure measurement on well number 6.

Also indicated here are the first two pressure measurements on Well Number 1, indicating that initial pressure of 3530, with a recovery of 7,500 barrels of oil; and a second pressure measurement of 2800-pounds after recovery of 70,000 barrels of oil. Now, the virgin reservoir pressure can be reasonably estimated from a back extrapolation of that portion of the decline, and doing that you'll notice a little red dash going back up there to the zero point on the abscissa that indicated pressure 3620 pounds being initially virgin reservoir pressure in the Ranger Lake, or in the Ranger Lake Penn Field.

Now, the subsequent wells drilled in that field all show the effects of pressure drop by reason of partial depletion. Wells Number 2, 4, and 6 come in varyingly from 600 or 800 pounds below virgin reservoir pressure, to as much as in the case of Well Number 6, some 1100 pounds below initial reservoir pressure. You'll notice that Well Number 3 had an initial pressure of approximately 3590 or 3595 pounds; 3597 is the accurate measure taken from Exhibit Number 6, and that pressure is a reduction of only 23 pounds from Well Number 1. That pressure is anomalous, it more normally would have been considered to come in somewhere in the same level of pressures, as well as Number 2, 4, and 6. And my opinion of the

reason why it did not is evidenced on this geologic cross section. Well Number 1 when completed, we took an initial test, was in the lower portion of the pay, got a top allowable well and shut her down there. We did not perforate the full interval of pay in the Ranger Number 1. Some drainage as evidenced by the 23 pounds took place from this entire segment by being produced through the limited perforationas in well Number 1. Now, Well Number 2, we did open the full pay, however, this wellwas completed just 90 days prior to this one, and pressure had not reasonable time to be felt to any marked extent in Number 3. So at the completion of this well, when we opened up the full pay --

MR. PORTER: By "this well", would you identify it by number?

A I will, Ranger Number 3. We find a good pressure communication and relatively high pressure; now, that well you'll note on these curves remains above the other wells with the same depletion. Well Number 4, running parallel, remains slightly below, this is Well Number 4. And wells 1 and 2 run almost identical pressures; those pressure measurements being 48-hour shutin pressures are reasonably related to the quality of the wells, and that's been shown on these logs. It is also related somewhat to structure, but on true statistics these wells, true statistics and infinite shutin time, these wells might be expected to reach, all reach the same ultimate pressure.

The most recent completion in the fidd is our Number 6 well,

and I've indicated the pressure drop on that one; communication in the field is also established. Referring to Mr. Lawrence's testimony, and not indicated on the exhibit because it was not available at that time, but out here the recovery of approximately 460,000 or 465,000, you could mark a point at 3225 pounds, that was the initial shutin 15-minute pressure on this J. C. Barnes well. Now, the mechanics of taking that test, going in with drill pipe, setting a packer, and without any recovery from that well it is opened to a shutin chamber, and you get almost an immediate fluid fill of that joint of pipe in the test tool, and it records 3225 pounds, which shows pressure depletion from the initial virgin reservoir pressure of 3620, or approximately 400 pounds, although that well is a mile from the nearest producing well. That's J. C. Barnes here, and the nearest producing well would be Phillips-Texas-Pacific and Company's Number 6 Ranger Lease well.

I think that's the important information of this Exhibit Number 9.

(Whereupon, Phillip's Exhibits 10-A, 10-B, 10-C, and 10-D, were marked for identification.)

Q Now, referring to Exhibit Number 10 -- 10-A, is it?

A A group of four exhibits.

Q Yes, 10-A, B, C, and D; explain those, will you please?

A Those are duplicates of our operating report; actually, it is a list of the individual well tests, taken throughout the life of the field. The "A" exhibit, Exhibit 10-A refers to Ranger

Well Number 1; 10-B to Ranger Well Number 2; and "C" to Well Number 3; and "D" to Ranger Well Number 4. The important items on this are the fact that the oil, API oil gravity shows a maximum variation from 39 to 41, measured throughout the field, and it is essentially similar on each of the four exhibits, indicating that the oil in each of the four wells has been in intimate communication, or has been in communication for an infinite time. It also shows essentially the same gas-oil ratio, all of them essentially at the solution ratio, indicating the nature of the productive mechanism to date. By fluid expansion, if you had a solution gas drive reservoir, those gas-oil ratios might be expected to increase with time; these as yet have not.

However, we are pretty close to that estimated bubble point, and they can be expected to increase in the future, but as of right now, in each of the four wells you will notice that the gas-oil ratios were 1 or 2, anomalous measurements 357 Gas-Oil Ratios, and perhaps as high as 1279 on the Gas-Oil Ratio; most of them vary between seven and eight hundred, nine hundred cubic feet per barrel under producing conditions, and that's representative of the reservoir, and we feel that it is an under-saturated fluid producing by fluid expansion.

(Whereupon, Phillips' Exhibit No. 11 was marked for identification.)

Q Now, referring to Exhibit 11, would you explain that?

A Exhibit Number 11 is a reservoir engineering material

balance, limited material balance calculation, showing a determination of the drainage area of Phillips Ranger Number 1. That utilizes two points; November 21 bottom hole pressure of 2311, and cumulative production at that date of 137,000 barrels, and the original conditions actually here were taken as original, that first pressure measurement of 3530, which was after 7,500 barrels of oil had been produced.

The change in formation volume factor, the change in oil shrinkage is the only mechanism lending to this production, and from those variations in that formation volume factor, related to the pressure on this well, the pressure decline on this well, and the production from this well, we can calculate that there were 9,788,650 barrels of reservoir oil that contributed, that were influenced by the production from this well. Relating that to volumetric measurement of the reservoir to a volumetric calculation of 11,488 barrels per acre in space, we see that the area of influence of the Phillips' Ranger Number 1 was 852 acres.

Now, I don't mean by that that it will drain 852 acres; it will influence 852 acres; it will drain effectively an area of about 20 percent of that, actually, we are looking for a tenth of that when we are looking for a well to efficiently drain 80 acres, and it will. A well in this pool of the character of Ranger Number 1, it's just a little below average as a well, but it had the maximum benefit of all reservoir energy for a period of about nine months, and under those circumstances it would have influenced

852 acres, would have drained perhaps 200 acres, the average well in the field being expected to drain 80 acres efficiently and economically on the basis of this calculation.

(Whereupon, Phillips' Exhibit No. 12 was marked for identification.)

Q Now, referring to Exhibit 12, would you explain that?

A Exhibit 12 is essentially the same thing; it approaches the solution of the problem from a slightly different angle. We take the point of view that had Ranger Number 1 been draining only 80 acres why, what percent of oil in place would have been recovered, and we say that if 14 and 9/10ths percent of the oil in place would have been recovered, we could have expected a pressure drop on that basis almost to depletion. Actually, the pressure had not depleted that far, so the recovery to a pressure drop of 2311 indicates that 1 and 4/10ths percent of the oil under 80 acres should have been drained out. Actually, we indicate here that 14 and 9/10ths percent of the oil under 80-acres had been drained out. Once again, that's 10 to 1. In other words, we are influencing eight hundred acres, roughly speaking, 850 acres.

The conclusion of that Exhibit 12 then is obviously that a much larger area than 80-acres was contributing to the production of that well.

Q So I take it that you have, in addition to your pressure tests that have been made, these other calculations referred to in Exhibits 11 and 12, which go into your conclusion concerning

the area drained by one well, is that correct?

A That's right. Those considerations all entered into my conclusions, and confirmed my conclusions, yes, sir.

Q And your conclusion is that one well will drain more than 80 acres in this pool, is that correct?

A Yes, sir.

Q Now, were these exhibits 4 through 12 prepared by you or under your supervision?

A The preparation of these exhibits was for the most part by myself, or under my supervision. Some of these exhibits were prepared by Mr. W. R. Bohon who happens to be my boss, and --

Q And the exhibits prepared by him, have you checked them and verified the accuracy of the information contained on them?

A I have, and they are accurate.

Q I would like to ask that Exhibits 4 to 12 be admitted into evidence.

MR. PORTER: Is there objection to the admission of these exhibits? They will be admitted.

Q (By Mr. Spann) Now, assuming the special rules are imposed or adopted for 80-acre spacing for a period of one year in this area, do you believe that that will affect the future development of the field, do you have an opinion about that?

A I have an opinion, yes. I -- we make a separate analysis of the economics of drilling; my analysis of the economics is such that 40-acre drilling is not commercial, represents a loss some-

thing in excess of $6,000.00, and that a prudent operator could not be reasonably expected to invest his money in this area if he anticipated recovery from 40-acres; and I therefore feel that the adoption of 80-acre spacing, or of temporary 80-acre spacing, will accelerate the activity in this area.

As a further effect on a man psychologically, on that I am not a psychologist, as an engineer though if we put two wells on these 80-acres, and then we find out that we have been wrong, we can't undrill that second well, we can't cut it and sell it for post-holes, or anything. If we put one hole on that 80-acres, and then find out that we have been in error on any of the data or assumption, we can at a later date drill that second well, if it becomes necessary.

And the immediate picture, the solubility and shrinkage calculations based on all five wells that have produced here for a cumulative time period of approximately two and a half years, would indicate that this reservoir is going to be something in the neighborhood of 27 million barrels of oil in place; it is going to be a relatively large thing, it will take approximately 30 wells to develop, between 30 and 35 wells to develop this pool. Right now we are looking at six wells, for all intents and purposes we are looking at five wells that we have a good history on, we could be wrong, and to put 40-acre development in here now would remove many of our potential producers from the area, I feel certain.

Q Well, now, at the end of the year period, assuming

these special rules are adopted, would you have additional information available for the Commission to make a determination, and if so, just what kind of information would you have?

A I will refer, if I might, to Phillips' Exhibit Number 1 that was put into evidence by Mr. Lawrence,and -- these drilling wells and locations can add materially to our knowledge of this pool. The average feet of net pay that we are using has been estimated, the average so far, in a limited portion of the field, the net pay contributed 32 feet. It might be materially different if we consider the entire area involved, it might be either more or less. If it was more, it would make closer drilling economically more attractive. If it is less, it will make wider drilling economically more attractive. So we have the feet of pay there, that will influence the reserves on the average in this field; also, we will attempt to confirm a structural position, is it high enough; we will have more logs, is the quality of the pay essentially similar throughout this total volume of oil that is likely to be found in Lea County, New Mexico.

Now, I think there will be a material increase, mostly areawise with respect to the perimeters of this field.

Q You heard Mr. Lawrence's testimony on the characteristics of the recent J. C. Barnes well that was completed, did you not?

A I did.

Q Does that data confirm your conclusions as to the

characteristics of this field, and your conclusions that one well would drain economically 80 acres?

A In spite of my attorney's comments that I should answer "yes" or "no" whenever I could, that is perhaps the strongest bit of evidence. We have a material influence here, some 400 pounds here a mile away, and that indicates certainly that you can drain out to 2,000 feet, that you can drain as efficiently as current technology makes possible out to a distance of 1200, 1500, 1800 feet, which would include all of the acreage in any design, reasonable design of an 80-acre tract, yes.

Q Mr. Berthelot, you also heard Mr. Lawrence's testimony about his Phillips' Exhibit 3, and the conclusions as to the amount of oil that would be recovered in the average well in this field, I believe the exhibit shows 210,000 barrels. Would you just explain to the Commission what calculations went into arriving at that figure?

A Yes, sir, I will. That's typical of what our geological analysis does. They have a group of "rule of thumb" correlations. The figures in here on 210,000 barrels of oil are arrived at by a 75-barrel per acre foot estimate, that's a real good figure based on Penn formations, particularly the Cisco. I've worked with Penn formations in Kansas, Oklahoma, Texas, Colorado, in Alberta, all over; it is a good round number, 75-barrels per acre foot, and you are dependent upon that then, and they have used 35 feet as an average pay through this area, average net pay.

35 feet times 75 barrels per acre foot, times 80 acres, 210,000 barrels of oil. A more specific and a more rigorous determination has been used in these calculations of volumetric analysis by myself, related to the standard volumetric calculations from which the 75 is derived by a long number of separate instances; in this particular instance, using 32 feet of net pay which was the average that we have to date, I think all geologists are essentially optimists, and they stretch it every time they do it.

He uses 9 to 10 percent porosity; the actual porosity as related to these lots, 8 and 7/10ths percent, 32 feet of pay, water saturation of 25 percent, leaving oil saturation in this reservoir of 75 percent, comes out 11,488 barrels per acre; and on 40-acres, 82,000 barrels recovery, on 80-acres 164,000 barrels of oil recovery. I also use a field price of petroleum product, it varies between three dollars and ten and three dollars and eight cents. Instead of basing our calculation on a 7/8ths working interest, in the Production Department we use the actual working interest in the tract, it varies between these Ranger wells. We have an eighth of 7/8ths override relative to the South Half of Section 23; we have a sixteenth of 7/8ths override up to an 800 oil payment figure on the NW¼ of Section 23; and various other overrides and considerations.

The average picture though is reasonable, this is a good atmosphere. I think it is a little bit optimistic, but it is close enough for the work that they do in proposing of wells.

Q Do you think then the conclusions that appear on that exhibit are fair and reasonable, and although slightly optimistic, something that you could pretty well go by in evaluating this field?

A Yes, sir.

Q Now --

MR. PORTER: I believe we better recess at this point, Mr. Spann, until 1:30.

MR. SPANN: Thank you.

(Recess.)

AFTERNOON SESSION
1:30 P.M., May 14, 1959

MR. PORTER: The meeting will come to order, please. Mr. Spann, I believe you were still in the process of direct examination of Mr. Berthelot.

MR. SPANN: I just have one more question, I believe.

Q (By Mr. Spann) Mr. Berthelot, Mr. Lawrence mentioned that you would enlighten Mr. White further about this three-O-one value of oil, or two eighty-five value of oil that went into his calculations that appear on Exhibit 3; would you do that?

A I will. Geological analysis ~~section~~ uses average figures in the Production Department, while like I stated before, we use more realistic figures, the field sales, and they have varied between two ninety-eight and three-O-eight. Three-O-one is an approximated average price of the crude sold from this field. More realistic, it does not change my opinion of the economics of drilling in the field.

MR. SPANN: I believe that's all I have, Mr. Porter.

MR. PORTER: Any questions of the witness?

MR. WHITE: I have very few.

CROSS EXAMINATION

BY MR. WHITE:

Q Mr. Berthelot, is it not true that a solution gas drive is recognized as being the least efficient of reservoir drive mechanisms?

A Yes.

Q And there is no evidence that this is a water drive, is there?

A No, to date we have no such evidence; I don't really expect it.

Q Is it not possible that the results of the periodic bottom hole pressure surveys and the bottom hole pressure interference tests that have been taken, indicate only the communication within one particular zone?

A Possible, but not probable.

Q Well, it is possible?

A It is possible, yes, sir.

Q Is it not also true that the fact that the Number 1 Cone well was a dry hole, that this definitely would demonstrate that there is a rapid change of the pay characteristics within the pool above the water-oil contact?

A No, sir; it is a question of semantics. You say

within the field, and you say as you approach the edge of the field, geologically speaking they are the same combination structure, stratographic.

Q Well, now, structurally, as far as your structure map is concerned, that recent well that was just, is being brought in now, that's about the same, the Barnes well is about, structurally located about the same as your Cone Number 1, is it not? In fact it is two feet lower --

A From an engineering point, they are flat, the same. If structure were the only consideration, Cone would have had a well in his Number 1. The limits of the field being restricted by stratigraphy, this change in litology is the reason he did not get a well, because the only part of the reservoir that he had, the only part that they have down there in J. C. Barnes, I have not seen a log on it yet, don't know anything about the sample analysis. I will know when I see the log, but I expect they have porosity development in the upper body that yours did not have, or that Mr. Cone did not have.

Q I believe Mr. Lawrence testified that apparently many of the operators in this pool have verbally expressed their desire to continue on 80-acre spacing program in developing the field, is that correct?

A To the best of my knowledge, that is correct.

Q And is it not your intention to continue to develop the field on an 80-acre spacing program, rather than on 40?

A The best laid plans of mice and men -- we would intend to so develop, and if forced by offset obligation, we couldn't do anything but take a long, long look at it and perhaps pay compensatory royalty, perhaps take farmouts on acreage.

Q It probably has been said as to how much additional evidence or data will be available to the Commission at the end of the year, if a temporary order is granted; it would appear that there would be equally as much data available, whether the order was issued or not?

A With a possible exception that the security of a temporary order would possibly accelerate the activity in this area. Locations have been staked; there is one well right up here, this Tidewater-Pacific-Western well, they ran a stall on that well, speaking quite boldly, they ran a stall. It is a little bit cheaper if we don't go out there with a spurtting unit to make our surface holes; they wanted to see the other units on the field before they moved in the rotary rig on that well. I feel that the additional security that might be felt even through temporary orders, will accelerate development in this area, and that there will be more information available because of an order than there would be in the absence of such an order.

Q You are speaking of what you presume other operators might do, not what you yourself will do?

A That is correct.

MR. WHITE: I think that's all the questions we have.

EXAMINATION BY MR. PAYNE:

Q Mr. Berthelot, do you know what the allowable is for a 40-acre well on this pool at the present?

A I know the approximate allowable.

Q It is about 164, isn't it?

A About 160, 164; the wells have averaged, they are producing top allowable. You might miss it just a little bit because of tank room, or because of pumper snarls, or something or the other, they are running about 160 barrels a day.

Q And if the Commission went to 80-acre spacing, the allowable for the 80-acre unit would be somewhere in the neighborhood of 200 a day, is that right?

A Yes, sir, that's my understanding.

Q And then a 40-acre unit would then get an allowable of a hundred barrels, correct?

A Yes, sir.

Q So that Mr. Cone's well would lose some 64 barrels a day, approximately?

A Unless an exception were made.

Q Yes, that's what I was getting at, Mr. Berthelot. I was wondering if Phillips Petroleum Company would be willing to waive objection to a 164 barrel allowable from Mr. Cone's one well here, he has only 40-acres to dedicate to it. In other words, it would remain on the same allowable that it is on now.

A Let me answer you this way, Mr. Payne. There are twelve people that constitute management of Phillips Petroleum Company that could answer your question. My recommendation would be that we not oppose it. Now, I have made a call to Bartlesville, and checked with Mr. Bohon's boss, our chief reservoir engineer, on the subject. He states that he would recommend that we not oppose such an exception.

Q Thank you. Now, one further question here on this question of fill-in wells at a later date. If the additional data that you gain during the first year, in view of the data you gain, now you say it is always possible of course to come back and drill on the 40-acre locations, but wouldn't that only be true if subsequent information develops the fact that a well in the pool is draining 40-acres or less? Here is the point, at the end of a year's time, say you come back and your data then shows that one well only efficiently drains 60-acres, now, it would have been producing an 80-acre allowable so presumably it would have been taking some of the oil from under another 40-acre location?

A Or from under that incremental 20.

Q Yes. So at the end of a year's time it might no longer be feasible to drill the fill-in well in view of the fact it might only have 20 acres of reserves?

A It is my personal opinion, and I've arrived at that by a rather thorough study of that field, you can make a rather thorough study of a limited field, actually you have done the same

here on a part of a large field, a real thorough study in this part; I'm certain, just as certain as I can be, that we will effectively drain the 80-acres and that that possibility will not arise.

Q You think there is very little possibility that infill wells will be feasible in this pool because of the fact that the one well will efficiently drain the 80 acres?

A Yes, sir, that's the way I feel. As I've stated before, I think that the additional information will largely be a matter of extent; extensive, not intensive perimeters, but extensive merely areally, and wouldn't change any.

Q Of course if you were wrong, and one well here will only drain 60 acres, then at the end of that year there is a good possibility, is there not, that you will not feel it profitable to drill that second well on the 80?

A No, sir. Really if you get down to it, our Number 1 well has produced about 160,000 barrels of oil, and it is just now at the bubble point; if that oil is coming out of 60 acres, there will be enough oil under the other 20 acres to drill a well for it. In my opinion, that oil is coming out of a 60, 80 acres of land, but if your supposition is correct, that oil is coming out of the well, is only coming out of 60 acres, there will be enough in that next 40 or 20 to make a drilling well profitable.

MR. PAYNE: That's all.

MR. PORTER: Anyone else have a question of the witness? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Mr. Berthelot, I notice on your, I believe, Number 5 there, in late 1958 in November you had five wells producing in this area, and then in December and January you only had four wells, and went back to five wells in February, what caused that?

A That's a question of the reporting is the only thing; these last three months are taken from your New Mexico Oil Conservation Commission report, a semi-official document of the State, and they did not start recording production from the Cone well until February of '59. Our statistician in Bartlesville who accumulated this first group of data for the prior hearing, had already started to pick up production from that well in November.

Q So this is computed from your own company records through November?

A Through November, yes.

Q And then from O. C. C. reports --

A Beyond that date. Now, what I did on this was to check these against the State reports, and the prior information, with the exception of the month of November, is again identical with your O. C. C. report, your New Mexico Reporter Recorders, and the variation there I didn't think was sufficient to raise an issue on.

Q Well, I thought maybe you had that well shut in taking some tests on it, or something.

A We didn't change the production by such a practice.

Q Mr. Berthelot, do you think Mr. Cone's well will pay out?

A Yes, sir, I do.

Q Where is that oil coming from?

A Under my lease.

Q Well, now, you got him surrounded there pretty well, haven't you?

A Yes, sir, sure do. But I'm draining part of the acreage. You see, the cumulative effect of these three wells right in here (indicating), there is a mile of undeveloped acreage here that is feeding those three wells. His well will pay out; it is going to pay out at the expense of Phillips-Texas-Pacific, perhaps of Texas-Penns, of Humble, and J. C. Barnes.

Q Well, now, you are setting up a drilling pattern as evidenced here by your Number 5 well, to drill in the NW¼ of that quarter section, and also presumably in the SE¼. Now, won't a well located in unit "A", or the NE¼ NE¼ better protect you from drainage by Mr. Cone?

A In the initial phase of the reservoir, yes; when it reaches the point as it has almost now in that area, from the solution gas drive point, why it will very shortly be limited by ratio and the concentration of wells will increase the ratio and reduce the take from our lease if we include another well in there, that's my opinion. It's happened that way in a number of fields.

Q Do you have the actual production, the cumulative production for each of the six or seven wells that are in the pool at the present time?

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A I do not. I can give you an approximation that is extremely close. They have all been top allowable wells, they have all produced their allowable from the date of their completion, and it has been taken ratably from the wells, I mean, the allowable assigned to a well has been produced from that well. We got a contract pumper out there, and those are his instructions, and it has been checked by our district personnel out of Hobbs, and that's the way it's been, and it won't plus or minus three percent.

Q Have any of the wells to date paid out?

A No, sir, they have not. Number 1 perhaps would have except that the cost of that Number 1 well was very nearly three hundred thousand. That was a wildcat, we took six drill stem tests, we had a couple of fishing jobs, we penetrated the Devonian, and at the time we had a plug-back job, and it is an unduly expensive well other than that it has produced sufficient oil to return the investment.

Q That's another thing I intended to ask you, Mr. Berthelot, what the actual drilling costs have been for the six wells that you have in there?

A Some of those are so recent that the machination of the corporation the size of Phillips doesn't give me the data on them. I got a sufficient number of costs here I am sure will be representative. The Number 1 shows authority for expenditure, that cost was $298,828.00, two-nine-eight-eight-two-eight. I can break that down into tangibles and intangibles.

Q Does that include going into the Devonian?

A Yes, that does, that included that; we got to pay for it some time. Number 2 well was $199,343.00.

MR. PORTER: Would you repeat that first one?

A First one?

MR. PORTER: No, the second one.

A One-nine-nine-three-four-three, the second one. Number 3, cost us one-seven-seven-nine-three-two. Number 4 cost us one-eight-six-eight-six-one. We have not closed the expense on Number 6 well yet, and Number 5 is still drilling. However, based upon the field estimates of those wells, Well Number 6 will cost us about $12,000.00 more than Well Number 4 did; Well Number 5 ought to be about an average well, it ought to cost us, the average on those three development wells has been $188,045.00, and I expect that we will drill Number 5 for that figure, one-eight-eight-0-four-five, that's initial cost of the well. We will produce for a time on solution gas drive flowing wells, and at approximately a recovery of 40 to 60 percent of the recoverable reserves, then we will install a pumping unit. It is pretty much a toss-up now whether we will put a 320 inch pound, or a 456 inch pound maximum; that unit will cost Phillips Petroleum Company $33,000.00 installed, and the smaller unit, a 320, will cost us twenty-six thousand, twenty-seven thousand dollars installed, in Lea County.

Q So the actual cost to drill these three development wells that you have completed costs on have been approximately

$12,000.00 less than the cost given on this?

A Than our estimated cost. Our estimates have ran from one hundred ninety-three thousand nine-nine five, to two hundred ten thousand five-one-five. The actual expenditures, so far we have been fortunate, like I say, the only well where we ran into trouble so far was on the Number 1 well, we had two fishing jobs. Now, it is going to happen again, it happens to everybody in the field, and you got to have your, a fee a little bit larger, you have to have your request for funds a little bit larger than you are going to spend, because you, if you don't the bosses are going to get all over you the first time you drop a cone in the hole.

Q Also, you are conservative in the estimate of reserves prior to the time that you submit it to management, aren't you?

A I would say that petroleum engineers tend to be conservative, yes.

Q So if this exhibit represents the tabulation that was submitted to management, it would be long on drilling costs and short on reserves?

A That's an awful free expression. That was not done by a petroleum engineer; those reserves, like I say, that two-ten was done by an earth scientist, a geologist, and they are, they look at things through rose-colored glasses. My personal estimate, we now submit them through production department control for funds, I would estimate 20 percent -- not 20 percent -- 12 percent less oil than that; and historically petroleum engineering estimates

have been conservative. You are right.

Q The average cost of a well, as a petroleum engineer, would be one hundred and eighty-eight thousand?

A I will say we are a little bit fortunate. I would say one hundred ninety to one hundred ninety-two, probably; by the time we get our acreage developed, our average cost of development wells will be one hundred ninety-two thousand. Now, we also got to split up that extra ninety-eight thousand, or one hundred thousand that we've got in this Number 1 well, see.

Q Well, now, Mr. Berthelot, I notice here on your Exhibit Number 9 where you show pressure versus cumulative lease production, that the Number 1 well had a rather sharp decline in pressure for the first increment of cumulative production there, and then the pressure decrease has levelled off subsequent to that, is that correct?

A Yes, sir.

Q Then it has a tendency to level more and more all the time, with the exception that you are taking between 3,000 and 4,000 pounds, I mean, barrels?

A Averaging those last five points, I would say that after that initial, you might call it spurt production, that I won't attempt to differentiate between the character of the slope on these things, the accuracy of our measurement. Those two were taken within a relatively short period of each other.

Q What is meant by "accuracy of measurement", since it has

been arranged like this from 2500 to 3500 pressure bottom?

A On the type we are using you can go 20-pounds real easy.

Q Could account for that 23-pound difference that you had between the Number 1 well?

A You could have 23 pounds, you could have 3 pounds, you could have 43 pounds. From an engineering point of view, you expect the 23 because it could be 20 pounds more, or 20 pounds less, or cumulatively speaking, 40 pounds.

Q Well, now, over here on Exhibit Number 11, where you calculated the number of barrels of oil in the reservoir that was being affected by the withdrawal of 137,000 barrels,you used a bottom hole pressure in November of 1958 of 2311. Now, this was a pressure that was the result of that sharp decline in the initial life of that well, isn't it?

A Yes, sir, that's from Well Number 1.

Q And the subsequent withdrawal also per barrel had been less, was it not --

A Subsequent withdrawals per barrel --

Q -- per pound drop?

A -- per pound drop has been less, which means you are influencing more as time goes on.

Q Now, in this formula, $\frac{N=dNB}{B-Bo}$, what is "B" there in that formula, Mr. Berthelot?

A "B" is the formation volume factor.

Q At that pressure?

A At that pressure.

Q Well, now, if you had withdrawn, or if you had taken another calculation at a time when you had withdrawn more barrels per pound of pressure decline than you did when you took this original calculation here, wouldn't you have a larger figure there in the enumerator of that number, the 137,000 would be larger, would it not, if you run this calculation on a later date?

A 137 would have been greater, yes.

Q What would the beta have been then?

A The same.

Q Wouldn't the pressure have been less --

A No, no.

Q -- if you tested it at a later time?

A Pressure would have been lower, right; beta would not have been materially different, however.

Q Beta is important, or the difference between --

A Beta subsea, or beta.

Q That is important --

A That is very, very critical, yes.

Q -- so what I am trying to get at here, Mr. Berthelot, if you ran this test or a calculation at a time when you had more barrels of oil recovered per pressure pound, than when you did, you would have a larger number in the enumerator, right?

A Yes.

Q But beta would be proportionately smaller because you would have less pounds per drop --

A No, beta is going up with time; beta is going up with time, you see your reservoir fluids are expanding.

Q Well, that's what I meant is the difference through --

A Would be greater also, but by a lesser amount than the number of barrels.

Q That's what I am driving at, so you have, in effect you would have a larger number in your enumerator, and a larger number in your denominator of that figure, but the proportionate increase in the denominator and enumerator would be out of kilter with each other, wouldn't they, wouldn't the enumerator go up faster than the denominator? That's what it amounts to.

A Let me look at some of the data.

Q Have you made this calculation for any other time?

A I have not.

Q For any other pressure?

A I have not. I have made similar calculations involving five wells, or four wells and the lease cumulative production from time zero to date.

Q Do you have that figure?

A Yes, all four wells here, that would come -- you are influencing 594 acres per well.

Q You have several wells?

A Four wells, and a composite pressure drop of 1500

pounds, and a shrinkage of 11 barrels per million per pound, and you are influencing 594 acres, and I have calculated it more than one way.

Q And you are influencing here 852?

A And that's reasonable because you see this was the first well, it had the greatest opportunity to influence; the composite of the four wells right at 600 acres, 594. Using that analogy, you are probably right in your assumption that if we used the one well, over the greater period of time you might have got a reduction in acreage to 750, or even down as low as 700, but still in the realm of 8 to 9 times the drainage area that we expect to efficiently drain with one well.

Q Well, now, in your next calculation there, you are using a net oil sand of 32 feet, what is that based on, Mr. Bethelot, is that what you assume to be the average for the whole pool?

A No; no, that's in your one well again, that's Ranger Number 1, 32 feet.

Q Well, your exhibit number 1 shows 10 feet for Number 1.

A No; no, that's 10 feet in the upper member.

Q Well, now, Mr. Lawrence in answer to my question said that the 10 feet represented the upper and the lower sand both.

A I believe that you are in error; I would have to ask Mr. Lawrence.

MR. LAWRENCE: I had in mind the 10 feet represented the net porosity in the upper porosity development; it did not represent the net porosity in the over-all Ranger Lake pay section.

Q Perhaps I misunderstood the answer, but I thought that when Mr. White asked you whether the feet of net pay represented the thaxed area as he called it, or the remainder of the pay itself that you stated that it represented the thaxed area only.

MR. LAWRENCE: No, sir, I had in mind the thaxed area represented the upper porosity development, and the figures designating the pay section there, restricted to that upper porosity development, they do not represent the net porosity in the over-all Ranger Lake pay section.

MR. NUTTER: In other words, you have 10 feet in the thaxed area --

MR. LAWRENCE: That's correct.

MR. NUTTER: -- for that Number 1 well?

MR. LAWRENCE: That's correct.

A There is an additional 22 feet in it, between the top of the pay and the water-oil contact, yes, sir.

Q (By Mr. Nutter) Well, now, how much pay do you have in the Number 2 well?

A I can look that up. I have that well credited with 28 feet.

Q How about 3 well?

A Number 3 well is better well, I have it credited with 47 feet.

Q How about the Number 4?

A It drops back down, sir; it's run here 32 and 2/10th

feet.

Q And how about the Number 6 well that has been completed?

A I have not made determination on Number 6 yet; we are still processing the records on it.

Q Have you had the figure available to you as to how much net pay they have in the Barnes well?

A No; no, we have not ever seen the log on it.

Q How about the Cone well? How many feet of net pay does he have?

A His well is slightly less than our Number 2; I really didn't go into his well with the degree of thought that I went into these other five.

Q Now, how about porosity, how much porosity have you had present?

A The porosity varies from well to well, but I did not make a separate tabulation by wells.

Q You used the Number 1 well as the criterion for establishing it?

A No, it was done collectively over the group of wells; the criterion was established in Number 2, where we had the core, and --

Q You defined the minimum porosity on your neutron log, and a shale porosity, and --

A The deflection is proportionate to porosity, but then that must be tied down to some physical measurement, and we tied

it to this core in the Nunber 2 well, and then I just added up feet.

Q Now, you had a core in the lower section only?

A That is correct.

Q Right?

A That is correct.

Q And is the lower section a better or worse section?

A It is a worse section, relatively speaking.

Q And what was this 8.7 percent, was that in the lower section?

A No, that's over-all.

Q That's the weighted average of porosity in the entire section there in the Number 2 well?

A In the whole field.

Q What is the actual porosity there in the lower section of the Number 2 well?

A The lower section of the Number 2. You have the core analysis on that, the average will run 6 and 7/10ths percent, and that's been raised by the addition of better porosity from gamma ray neutron logs correlated on that basis.

Q How about the connate water, is that from the one core?

A From the one core, 25 percent. As a normal thing, the increase of 2 percent porosity would not materially affect that connate water saturation; it might give you an oil saturation of 76 percent rather than 75 percent.

Q Have you made any calculation of the reserves under the individual wells, or have you taken this 32 feet and made that one reserve calculation?

A I made it on the basis of 32 feet; I've looked at it on the basis of 40 feet; I also looked at it on the basis of 16 percent recovery, and on the basis of 18 percent recovery. The trouble is they don't let me decide where we are going to drill, they -- somebody else decides that, and my calculations have principally been from, oh, shall we say, curiosity, and then it is necessary that I have a "feeling of our properties" if I am going to conduct my job properly.

Q Anywhere from 15 to 20 percent recovery is a reasonable recovery factor for a pool of this type?

A No, it wouldn't go 30 percent on solution gas drive; like Mr. White said, it is the least efficient method, some solution gas drive reservoir units get 30 percent, but they are not in the 10,000 foot depth bracket; when you get below 8,000 feet, when you get below 6,000 feet, you start reducing that maximum; you might get as much as 20 percent of the oil in place if you were lucky, at 10,000 feet from solution gas drive reservoir.

Q If we don't have a water drive in this pool, you consider 20 the maximum?

A If we do not have a water drive, and like I say, I don't anticipate a water drive, the water recoveries if you will notice have all been small, the water has been relatively immobile

on these two tests that recovered water. From my point of view, the water was just important in that it was water, that's why I reason that there will not be an active water drive in this Penn field.

Q There is a watertable there, but it is not moving?

A It is not moving, and that is borne out by these exhibits 10-A, B, C and D. We have not seen any water production as yet on any of our wells.

MR. NUTTER: That's all.

A It might help our case if we could have a little water drive; the water has a compressibility of about 3 parts per million, rather than 11 parts per million, and if the expansion of water was influencing this recovery, why we would be influencing four times as much acreage as the calculation shows, but I don't think that is the case.

MR. NUTTER: I believe that's all I have. Thank you.

QUESTIONS BY MR. PAYNE:

Q Mr. Berthelot, is the casing head gas produced from these wells being vented or flared?

A That's another question I wish you didn't ask. Yes, sir, it is, with the exception of a minor amount being used for lease use, and what we call nuisance contracts where we sell for development purposes.

Q So with increased allowance, there would be of course

more gas being flared?

A There would be more gas being flared.

Q Is there any possibility of getting a connection to take --

A The area is under investigation; this is not an isolated, not an isolated thing. Mr. Lawrence knows and talks about other development. Here we have an interest in one right about here, Humble's, we are watching very,very carefully; we got a well drilling over by Santiago, I forget the name of that prospect.

MR. LAWRENCE: It is the Spray Field.

A Spray Field, we got a well going on over there now, and we have several people itching to get their finger on this gas.

Q So it is certainly within the realm of probability that you will get connections for the gas?

A Yes; yes, very definitely, very definitely.

MR. NUTTER: When, Mr. Berthelot?

A That's another thing they don't let me decide; I would have had it yesterday.

MR. NUTTER: Do you know of any contracts that have been consummated, or any construction of any gathering system?

A I think, to the best of my knowledge, I am in contact with Walter Cox, our gas man in Amarillo, and they are actively working on it, and that's all he will tell me. That can mean a lot of different things, that can mean from 6 months to 18 months.

MR. NUTTER: Yes, sir, I know. Thank you.

MR. PORTER: Anyone else have a question of the witness? The witness may be excused.

Mr. Spann, does this conclude your testimony?

MR. SPANN: Just a moment, Mr. Porter. Mr. Nutter asked about the net pay in the Cone well. Mr. Lawrence has that information, if you care to have it.

MR. NUTTER: You have that available?

MR. SPANN: Do you want me to put him back on?

MR. PORTER: I think he can answer from where he is; he has already been sworn.

MR. LAWRENCE: The Gordon Cone Number 1 State-24, we felt had zero net pay. The Gordon Cone Number 2-24 in the SW of the SW of 24, we felt had 12 feet of net pay.

MR. NUTTER: Thank you.

MR. SPANN: That's all we have.

MR. PORTER: Mr. White, do you desire to proceed?

MR. WHITE: If the Commission please, in the event the Commission deems proper to issue an order as requested by the application, on behalf of Mr. Cone, I would like to submit that the Commission adopt a pool rule providing that any present well producing on a 40-acre unit to which 80-acres cannot be dedicated, that such well be given a normal 40-acre unit allowable.

MR. PAYNE: How many of such wells are there at present, Mr. White?

MR. WHITE: To my knowledge there is only one, the Cone

Number 2. That's about the only way we can protect the correlative rights.

MR. SPANN: In behalf of Phillips, we would not oppose that, insofar as it applies to Mr. Cone's well, the recommendation of Mr. White.

MR. WHITE: Thank you.

MR. PAYNE: I understood your witness, Mr. Spann, to say that he felt that he would not have any objection, at least personally, to a normal 40-acre allowable for this Cone well?

MR. SPANN: Isn't that what I concur, agree that we would not oppose Mr. White?--

MR. PAYNE: I see. Thank you.

MR. SPANN: So concerning that, and I thought that's what I agreed to.

MR. PORTER: I misunderstood you too, Mr. Spann.

MR. WHITE: In other words, you concur in this proposal?

MR. SPANN: I would not oppose it.

MR. PORTER: Seems the lawyers are conservative too, sometimes.

MR. SPANN: If I may, I would like to as part of our case, just call the Commission's attention, if I may, to --

MR. PORTER: Mr. Spann, do you desire to make a closing statement at this time, or would you include this as part of this? I was first going to conclude the testimony, if anyone else

desires to present testimony, then you can go ahead and present your statement.

MR. WHITE: We have no testimony.

MR. PORTER: Mr. Spann.

MR. SPANN: I would merely like to call the Commission's attention to their order R-892 entered in Case Number 1102, in which you established permanent 80-acre spacing in the Dean Permo-Penn Pool; and your order R-895 in Case Number 1125 in which order you likewise established permanent 80-acre spacing in Elaine Penn Pool. My point being that there is precedent in the Penn for 80-acre spacing in Lea County. I want to include that as part of our case.

Now, so far as a final statement is concerned, Mr. Porter, we feel that the available information obtained from bottom hole pressure tests of the wells drilled to date in the pool, including the recently completed J. C. Barnes wells, establishes that effective communication exists in areas greater than 80-acres, and that one well will efficiently and economically drain 80-acres.

We also feel that from an economic standpoint, it apparently is not feasible to drill wells on 40-acres, and feel that if these temporary rules are imposed for a year's period, that we can come back and give you additional information which will confirm what we feel we have established today, which is that this pool should be developed on 80-acre spacing. Of course, if our -- if the additional information obtained in the next year indicates otherwise, then of

course we can always proceed to drill in fill-in wells and develop that area on 40-acres. However, contrarywise, if it is developed on 40-acres now, and this development confirms what we have said about it, the wells have been drilled at this extra expense, and there is no way of recovering the investment that has been made. And I understand that in these hearings, or 80-acre spacing hearings, one of the difficult problems you are always confronted with is where areas that have been developed on 40-acres should be converted to 80-acre spacing. In view of the testimony taken, and the information obtained, and we want to preclude our having to come in here sometime down the line with an area developed on 40, and ask for 80's, based on the information that has been developed, and we therefore urgently request that at least temporary 80-acre spacing be invoked or imposed in this area.

MR. PORTER: Any other statements or comments on the case? I will take the case under advisement.

Proceed with the next case on the docket.

MR. PAYNE: May it please the Commission, we did receive a communication here from Santiago Oil and Gas Company, who concurs in the application of Phillips Petroleum Company for 80-acre spacing in this pool.

MR. PORTER: Let the record show that the telegram is part of the record in this case.

(Whereupon taking of testimony in this case was concluded.)

C O P Y

WESTERN UNION TELEGRAM

MAIN OFFICE OCC
1959 MAY 12 PM 4:32

1949 MAY 12 (PM) 4 10

LA 216 DA 462

D MDA200 LONG PD=MIDLAND TEX 12 420PMC=

A. L. PORTER JR, SECRETARY AND DIRECTOR=

OIL CONSERVATION COMMISSION SANTA FE NMEX=

REGARDING THE HEARING ON 13 MAY 1959 OF THE COMMISSION FOR THE APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING TEMPORARY 80 ACRE SPACING IN THE RANGER LAKE FIELD LEA COUNTY NEW MEXICO. SANTIAGO OIL AND GAS COMPANY IS FAMILIAR WITH THE FACTS INVOLVED IN THIS APPLICATION AND AS AN OPERATOR IN THE AREA WISHES TO RESPECTFULLY URGE THAT THE 80 ACRE SPACING PROGRAM BE ADOPED BY THE COMMISSION=

R. L. REDLINE JR PRESIDENT SANTIAGO OIL AND GAS CO-

=13 1959 80 80=

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript by me and/or under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal, this, the 6th day of June, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1668

TRANSCRIPT OF HEARING

MAY 14, 1959

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1668 (REHEARING)

TRANSCRIPT OF HEARING

AUGUST 13, 1959

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 3-6691

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
AUGUST 13, 1959

IN THE MATTER OF:

CASE 1668 (Rehearing)
In the matter of the rehearing requested by Phillips Petroleum Company for reconsideration by the Commission of Case No. 1668 which was an application for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool and certain adjacent acreage in Lea County, New Mexico, to provide for 80-acre proration units. The rehearing will be limited to a brief and argument on the legal propositions raised in the petition for rehearing and their application to the facts heretofore presented in said case.

BEFORE:

A. L. Porter
Murray Morgan

T R A N S C R I P T O F P R O C E E D I N G S

MR. PORTER: The meeting will come to order, please. We are going to take up next the rehearing in Case 1668.

I might announce at this time that the Commission will probably run the hearing right on through until maybe one o'clock before recessing for lunch. The members of the staff and possibly some other members would like to attend the funeral this afternoon. We'll probably just go ahead, at least until one o'clock and see how things come out.

Take up at this time Case 1668.

MR. PAYNE: Case 1668. (Rehearing) In the matter of the rehearing requested by Phillips Petroleum Company for recon-

sideration by the Commission of Case No. 1668 which was an application for an order promulgating temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool and certain adjacent acreage in Lea County, New Mexico, to provide for 80-acre proration units.

MR. SPANN: Charles C. Spann, of Grantham, Spann & Sanchez, Albuquerque, appearing for the applicant, Phillips Petroleum Company, and I have Mr. Joe Meroney of Midland, Texas associated in the case. I would like to file five copies of a brief with the Commission. Our position is, of course, stated in detail in the brief, and I'll try to merely summarize at this time our position and not take up the Commission's time with a lot of unnecessary rehashing of something that is already set forth in the brief.

Our position, briefly, is that under the evidence that has been introduced in support of this application, the Commission should have granted it, and under the rules of procedure and rules of evidence that govern this Commission in its determination that it follows the application had to be granted. Of course, after going into this, I concluded you couldn't do this to me, but you went ahead and did it, so obviously I'm not entirely correct in that position. I do feel sincerely, however, that when an applicant presents undisputed evidence establishing certain facts as they did in this case, that under the laws of New Mexico, this Commission cannot arbitrarily disregard those facts and that evidence and make findings contrary to them as you did in this case. Your findings which you made in support of the order was to the effect that we had failed to prove that the Ranger Lake-Pennsyl-

vanian Pool can be efficiently drained and developed in an 80-acre spacing pattern. You also found that the development of the Ranger Lake-Pennsylvanian Pool on 40-acre proration units would not cause the drilling of unnecessary wells. Well, now, we presented, as you will recall, a geologist and petroleum engineer, both of whom gave it as their opinion, based on the tests that were made and the evidence they had gathered and the study of the field that they had made, both of them gave it as their opinion that in the Ranger Lake Pool one well would drain greatly in excess of 80 acres. Now, there was no evidence to the contrary. The Commission introduced none, there was no protestants involved or royalty interest owners or other operators who objected. As a matter of fact, they all supported it. All the evidence was to the effect that one well will drain far in excess of 80 acres. Notwithstanding, you say that one well, we failed to prove that one well will drain 80 acres which, of course, brings up the question of what is our obligation in establishing that fact before this Commission. And I contend, as I point out in the brief, that you are bound in that sort of a determination by the ordinary rules of evidence that bind any Court in New Mexico. Our Supreme Court has so held in cases that have involved other administrative tribunals such as Corporation Commissions. So what was our obligation? Our obligation under the law of New Mexico was to establish by substantial evidence that one well would drain in excess of 80 acres. Now, what is substantial evidence? We have a clear definition in a case of Lumpkins vs McPhee, 59 N. M. 442, saying this:

"Ordinarily, the evidence is deemed substantial if it tips the scales in favor of the party on

> whom rests the burden of proof, even though it barely tips them. He is then said to have established his case by a preponderance of the evidence. A finding in his favor on the decisive issue is thus said to be supported by substantial evidence."

Now, it is almost impossible, I submit, and the Lumpkins case bears me out, to find contrary to undisputed issues under New Mexico law. When anyone gives as their opinion, assuming they are qualified, that a certain thing is a fact and nothing is presented to the contrary, you are bound by it, the Court is bound by it, and that was done in this case. As a matter of fact, I just heard Mr. Utz testifying here a few minutes ago, and Mr. Payne asked him if it is his opinion that prorating these pools will prevent waste. Mr. Utz said, "Yes", so you use that as a basis for entering an order, that's all. You do that all the time, and, of course, that's what you should do and, of course, that is what you should have done in this case.

Now, there is one case in New Mexico that I think perhaps should be discussed briefly. I happened to have been in it on appeal, and it is pointed out in the brief. It involved a damage accident against Cartwright Hardware Company and some other people, and the Plaintiff had been injured in an automobile accident involving a taxi cab and a Cartwright Hardware Company truck. Now, the driver of the truck of Cartwright Hardware Company said at the time of the accident he was not carrying out the business of the company for whom he was employed. He said he was going to his mother-in-law's on personal business. We didn't know why he was going there and had no evidence to contradict it. The Court found, as a matter of fact, that at the time of the accident this man was not driving the truck in his master's business, and put Cartwright

Hardware Company out of the case. The Supreme Court upheld it, saying the trial court was exactly right in that. They said this:

> "This Court states the evidence on the point is undisputed and must, therefore, be accepted as true."

It was argued by the appellant that certain inferences and deductions should be indulged in because of the fact that tools and pipes were found in the car and the driver was in working clothes at the time of the collission.

The Court said this:

> "This claim leads into the field of speculation. The courts generally hold that such doubtful inferences are not sufficient to contradict positive testimony."

So we are just out. Now, it may be contended that our witnesses, for example, being employed by Phillips, might have been prejudiced. That makes no difference under the rule. Under the general law in this subject, when you have expert testimony which is undisputed, these Commissions are just bound by it, and that is what we had in this case. Now, I submit that you cannot make a finding contrary to undisputed evidence where one well will drain 80 acres. In addition, we introduced evidence that it would be uneconomic to drill on 40's. Calculations were made as to reserve, the value, and what it would cost to drill these wells, and both witnesses testified and introduced Exhibits to the effect that it would be uneconomic to drill on 40's. So, by your finding that the drilling on 40's would not result in unnecessary wells being drilled, it is just contrary to undisputed evidence. And again I say you cannot, as an administrative tribunal, and you are bound by rules of evidence that bind our court, you cannot reject undisputed evidence and make findings contrary to it. I say you can't. You

did it, but I mean, you shouldn't do it under the law.

Now, there is one other thing that I think should be pointed out here that is important. You, as an administrative tribunal under the law, should decide this case on the record that was made before you. You should not indulge in speculation about what you have heard in other cases that you may have heard, and I'm sure there have been other applications for 80-acres in the Pennsylvanian pools in New Mexico. As a matter of record also, and evidence was presented and all that sort of thing. Unless the evidence appeared in the record in this case, you are not entitled to consider it in making your determination.

Now, there is a reason for that, and that was pointed out clearly in Transcontinental Bus Company vs State Corporation Commission. The Supreme Court said:

> "The Commission is authorized only to make its decision upon the evidence adduced at the hearing and made a part of the record. In either instance the Commission violated the statute and failed to give the appellant a fair and full hearing. The appellant was entitled to such a hearing as the statute provides. It was entitled to a hearing as provided by law, conducted fairly and impartially, with an opportunity to introduce evidence to refute or modify any matters or facts which the Commission might take into consideration in reaching its decision."

Now, if it is the opinion of this Commission and the staff that -- resulting, of course, from evidence you might have gathered in other cases -- if it is your opinion that one well will not efficiently drain 80 acres in this pool then the staff ought to come forward with that evidence and permit us to cross refute it if we could and explain it if we could, and that is just something that is required under, again, the laws of procedure that govern these

administrative hearings. And, of course, there is no such evidence in this record in this case.

Now, in two cases I mentioned, Transcontinental Bus Company and in another case, State versus Mountain State Telephone and Telegraph Company, the Corporation Commission was required, in the Continental case, by statute to "consider existing facilities in the field", before a new authority was granted -- operating authority, This was an application for a common carrier certificate, and they were to consider existing facilities in the field. Now, in that case they failed to do that. And the Court reversed it. In the Mountain States Telephone & Telegraph Company, under the Constitution, the Commission was required, in fixing rates, to:

> "Give due consideration to the earnings, investments and expenditures as a whole within the State in fixing values of public utility corporations' property as a basis for rate making, an order fixing or approving such rates is void."

They failed to consider the Telephone Company's earning and so forth as the Constitution required, and the Court reversed it and said the order was void because in this case there was a Constitutional mandate and in the other case, a mandatory mandate requiring them to do a certain thing, and they failed to do it in making that determination.

You have a statute which requires you to take into consideration certain things in making your determination. The statute says:

> "The Commission may establish a proration unit for each pool, such being the area that can be efficiently and economically drained and developed by one well, and in so doing the Commission shall consider the economic loss caused by the drilling of unnecessary wells, the protection of correlative rights, including those of royalty owners, the prevention of waste, the avoidance of the augmentation of risks arising

from the drilling of an excessive number of wells ....."

Now, there is no question of correlative rights here. We contend that you failed to observe that statutory mandate when you ignored the fact that the undisputed evicence shows that this was caused by the drilling of unnecessary wells, when it is established and undisputed that one well will drain 80 acres and you require us to drill on 40, you are causing us to drill unnecessary wells. And you have failed to consider that fact in arriving at your determination which the statute says you must. Furthermore, the augmentation of risk arising from the drilling of excessive number of wells, you have violated that, in my opinion, based on the evidence in this case.

Now, under those two cases the Supreme Court says that you cannot do that. Now, also you are to consider prevention of waste. Now, I think it is waste to require us to drill additional wells under the circumstances. I think that in a situation as we had here, where the undisputed testimony is that if you develop on 80's, the exploration and development of the field will be encouraged and enhanced, but when that evidence is in the record and you hold contrary to it, it results in waste because the development and exploration that would otherwise occur would not occur under their testimony, so that results in waste, in my opinion, but that generally, may it please the Commission, is our position. It is a question here of looking at the record, and based on the undisputed evidence in that record, is your order a proper one, and is there evidence to support it? And I submit there is not, and that under the Supreme Court decisions that have come up in cases not involving this Commission, but other administrative tribunals of

this state, under those decisions, you are simply bound to recognize substantially all evidence, and rules, which you did not do in that case. That is generally.

MR. PAYNE: Mr. Spann, would you mind answering a question?

MR. SPANN: Be happy to.

MR. PAYNE: Where you said there is no question here of correlative rights --

MR. SPANN: On the record, based on the record.

MR. PAYNE: Now, as I recall, Mr. Cone had a 40-acre well in this pool and Phillips waived objections to him getting the same allowable that he is now getting.

MR. SPANN: That is true.

MR. PAYNE: Do you feel it would be legal for the Commission to do that, assuming that they went to 80-acre spacing, gave Mr. Cone the same allowable that he is getting now, which would be more than half of an 80-acre allowable?

MR. SPANN: Do I feel it would be legal?

MR. PAYNE: Yes.

MR. SPANN: On a proper application and so forth, I assume you could.

MR. PAYNE: Well, now, his allowable is not going to be based -- or his total recovery is not going to be based on the recoverable oil in place under his 40-acre tract, is it?

MR. SPANN: Well, perhaps not. However, that's a question, it seems to me, that will have to be resolved by the Commission down the line. It is not an issue in our case at this point. As I understand, as a result of the statement we made, he withdrew

any protest, at least to the application we filed, and introduced no evidence in the case.

MR. PAYNE: Do you feel this way, that if nobody comes in and opposes the Commission doing something of this nature, that they have therby waived their right to protection of correlative rights? Is silence a waiver?

MR. SPANN: No, but I think there should be some evidence in the record as to the problem and how it might be affected by this decision. There isn't any in this case.

MR. PAYNE: Thank you. That's all.

MR. MORGAN: Mr. Spann, are you proposing that we issue a writ of mandamus in effect against ourselves?

MR. SPANN: Do I propose you issue a writ of mandamus?

MR. MORGAN: Against ourselves, yes.

MR. SPANN: I am proposing that you vacate the order that you entered and enter a new one granting our application.

MR. MORGAN: Isn't it the same thing?

MR. SPANN: No, sir.

MR. PORTER: Anyone else have any statements to make in this case, Case 1668?

MR. KELLAHIN: If the Commission please, Jason Kellahin, Kellahin & Fox, representing Amerada Petroleum Corpration. We would like to make a brief statement in support of the position taken by Phillips Petroleum Company in this case on the ground that on the present state of the record, it is clearly indicated that the order entered by the Commission should be vacated and a new order entered, and we do urge upon the Commission that they reconsider their decision in this case. I will not present legal argument.

I think it has been adequately stated by Mr. Spann, but just on the basis of the record, I think the Commission has before it considerably more than expert conclusions. The conclusions which was made, of course, is entitled to weight and consideration by the Commission, but in addition to that, adequate testimony has been presented on the physical facts existing in this pool to show that one well will economically and adequately drain an 80-acre tract, and we urge the Commission to reconsider its decision.

MR. PORTER: Anyone else have a statement to make? Anything further in this case? Take this case under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JOSEPH A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing were reported by me in Stenotype, and that the same was reduced to typewritten transcript by me and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

DATED this 21st day of August, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 1668
Order No. R-1418-C

APPLICATION OF PHILLIPS PETROLEUM
COMPANY FOR AN ORDER ESTABLISHING
SPECIAL RULES AND REGULATIONS FOR
THE RANGER LAKE-PENNSYLVANIAN POOL,
LEA COUNTY, NEW MEXICO, TO PROVIDE
FOR 80-ACRE PRORATION UNITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 17, 1960, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 30th day of August, 1960, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

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

(2) That by Order No. R-1418-B, the Commission promulgated temporary Special Rules and Regulations governing the drilling, spacing, and production of wells in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units.

(3) That the applicant now seeks an order making said temporary Special Rules and Regulations permanent.

(4) That the data gathered since the entry of Order No. R-1418-B and presented in this case corroborates the conclusion of the Commission reached in said Order that the Ranger Lake-Pennsylvanian Pool can be efficiently and economically drained and developed on 80-acre proration units and that to require development of this Pool on 40-acre proration units would probably cause the drilling of unnecessary wells.

(5) That accordingly the Special Rules and Regulations for the Ranger Lake-Pennsylvanian Pool promulgated by Order No. R-1418-B, as well as the proviso relative to the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, should be made permanent.

IT IS THEREFORE ORDERED:

That the Special Rules and Regulations for the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, promulgated by Order No. R-1418-B, as well as the proviso relative to the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, be and the same are hereby made permanent.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

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

esr/

GOVERNOR
JOHN BURROUGHS
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
MURRAY E. MORGAN
MEMBER

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

P. O. BOX 871
SANTA FE

August 30, 1960

Mr. Charles C. Spann
Spann Building
Box 1031
Albuquerque, New Mexico

Re: Case No. 1668
Order No. R-1418-C
Applicant:
Phillips Petroleum Company

Dear Sir:

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

Very truly yours,

A. L. PORTER, Jr.,
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other Mr. G. W. King - Pan Amer.
Charles White
R. S. Christie - Amerada
Jack Campbell
Terrell Couch
Joseph I. O'Neill, Jr.

BEFORE THE OIL CONSERVATION COMMISSION OF

THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING SPECIAL RULES AND REGULATIONS FOR THE RANGER LAKE - PENNSYLVANIAN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 80-ACRE PRORATION UNITS

NO. _____

A P P L I C A T I O N

Comes now Phillips Petroleum Company and makes this Application for an order promulgating special rules and regulations, to provide for 80-acre proration units, for the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, and in support of the Application states:

1.

On the 26th day of August, 1959, the Oil Conservation Commission in Case No. 1668, Order No. R-1418-B, adopted an order promulgating, effective September 1, 1959, temporary special rules and regulations for the Ranger Lake-Pennsylvanian Pool in Lea County, New Mexico, to provide for 80-acre proration units. Said order, to which reference is made for all its terms and provisions, provided that the case should be reopened at the regular monthly hearing of the Commission in August, 1960, to permit any operator to appear and show cause why said Pool should continue to be developed on 80-acre proration units.

Phillips Petroleum Company desires to appear at said hearing set for August 17, 1960, and show that said Pool should continue to be developed on 80-acre proration units, and therefore files this Application.

2.

According to the Commission's Southeast Pool Nomenclature, the Ranger Lake-Pennsylvanian Pool is presently described horizontally as SE/4 of Section 22, all of Section 23, SW/4 of Section 24, N/2 of NW/4 of Section 25, West Half of Section 26, N/2 of NE/4 of Section 26, East Half of Section 27, N/2 of SE/4 of Section 34, NE/4 of Section 34, and W/2 of NW/4 of Section 35, all in Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, said designation having been established by this Commission by its orders R-928, R-1042, R-1118, R-1324, R-1441, R-1509, R-1559, and R-1652.

3.

A well density of no more than one well to each 80 acres has heretofore been maintained in the development of said Pool.

4.

Applicant states and will show that one well can efficiently and economically drain 80 acres in said Pool and that special rules and regulations should be adopted establishing 80-acre proration units for said Pool and in the area above described, each unit to be half (N/2, S/2, E/2 or W/2) of a quarter section of the United States Land Surveys and the well thereon to be located in the center of one of the two 40-acre quarter quarter sections comprising the unit, with a tolerance allowance of up to 150 feet in any direction from the center of the quarter quarter section when such tolerance is necessary in order to avoid structures or natural obstructions rendering drilling impossible or impracticable.

5.

Such spacing of wells as herein requested will insure orderly development of said Pool, protect correlative rights, prevent possible waste, and prevent the economic loss caused by the drilling of unnecessary wells. Furthermore, it may be uneconomical to drill wells in said Pool on less than 80-acre spacing and further development may be impeded unless 80-acre proration units are established.

6.

Applicant further requests that the Commission enter such other special rules and regulations for the Ranger Lake-Pennsylvanian Pool as it shall deem proper and justified in view of the evidence presented at the hearing herein requested.

7.

Applicant will not oppose a provision in the order requested by this application that any well which was drilled to and producing from the Ranger Lake-Pennsylvanian Pool prior to September 1, 1959, which presently has 40 acres dedicated to it, and to which cannot be dedicated an 80-acre unit which can reasonably be presumed to be productive of oil from the Ranger Lake-Pennsylvanian Pool, shall continue to be assigned an allowable equal to normal unit allowable times the 40-acre proportional factor for said Pool of 4.67, all as was provided in Order No. R-1418-B referred to above. Such exception should apply only to the Gordon Cone Well No. 2-24, located in the SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico.

The names and addresses of other operators owning interests in the Ranger Lake-Pennsylvanian Pool (and in the areas to be affected by the order herein sought), so far as are known to applicant, are as listed on Exhibit "A" attached.

WHEREFORE, Phillips Petroleum Company, the applicant herein, prays the Commission to set this application for a public hearing before the Commission at the regular monthly hearing of the Commission set for August 17, 1960, that notices be issued according to law, and that after such hearing this Application be in all things granted.

Carl W. Jones

CARL W. JONES
P. O. Box 791
Midland, Texas

GRANTHAM, SPANN AND SANCHEZ

By _____

904 Simms Building
Albuquerque, New Mexico

Attorneys for Applicant
PHILLIPS PETROLEUM COMPANY

EXHIBIT "A"

Texas Pacific Coal and Oil Company
P. O. Box 2110
Fort Worth, Texas

Amerada Petroleum Corporation
P. O. Box 312
Midland, Texas

Barnes Oil Company
P. O. Box 505
Midland, Texas

Gordon M. Cone
P. O. Box 1148
Lovington, New Mexico

Pan American Petroleum Corporation
P. O. Box 68
Hobbs, New Mexico

Tidewater Oil Company
P. O. Box 547
Hobbs, New Mexico

Continental Oil Company
825 Petroleum Building
Roswell, New Mexico

Mobil Oil Company
P. O. Box 2406
Hobbs, New Mexico

Ralph Lowe
P. O. Box 832
Midland, Texas

Sunray Mid-Continent Oil Company
P. O. Box 128
Hobbs, New Mexico

F. J. Danglade
P. O. Box 675
Lovington, New Mexico

Monsanto Chemical Company
602 West Missouri
Midland, Texas

Pacific Western Oil Company
c/o Tidewater Oil Company
P. O. Box 547
Hobbs, New Mexico

Monterey Oil Company
6th Floor, Wilco Building
Midland, Texas

The Pure Oil Company
204½ West Taylor
Hobbs, New Mexico

The Ohio Oil Company
P. O. Box 2107
Hobbs, New Mexico

Tennessee Gas & Oil Company
Hobbs, New Mexico

H. J. Porter
Gulf Building
Houston, Texas

Gulf Oil Corporation
Petroleum Building
Roswell, New Mexico

Humble Oil & Refining Company
P. O. Box 2347
Hobbs, New Mexico

Joseph I. O'Neill, Jr.
410 West Ohio
Midland, Texas

Nix & Curtis
P. O. Box 605
Artesia, New Mexico

Emmett D. White
P. O. Box 146
Roswell, New Mexico

Texaco Seaboard, Inc.
Doscher Building
Sweetwater, Texas

GRANTHAM, SPANN AND SANCHEZ
ATTORNEYS AT LAW
904 SIMMS BUILDING
POST OFFICE BOX 1031
ALBUQUERQUE, NEW MEXICO

EVERETT M. GRANTHAM
CHARLES C. SPANN
MAURICE SANCHEZ
FRED M. STANDLEY

TELEPHONE
CHAPEL 3-3525

July 18, 1960

Case 1668

Mr. A. L. Porter, Secretary
Oil Conservation Commission
P. O. Box 871
Santa Fe, N. M.

Dear Mr. Porter:

I enclose herewith for filing, original and 2 copies of Application of Phillips Petroleum Company for establishment of special rules and regulations to provide for 80-acre units for the Ranger Lake Pennsylvania Pool, Lea County, New Mexico

Very truly yours,

GRANTHAM, SPANN AND SANCHEZ

By Charles C. Spann

CCS:MI

encl 3

Docket Mailed Aug 1, 1960

No. 23-60

DOCKET: REGULAR HEARING AUGUST 17, 1960

Oil Conservation Commission - 9 a.m., Mabry Hall, State Capitol, Santa Fe, N. M.

ALLOWABLE: (1) Consideration of the oil allowable for September, 1960.

(2) Consideration of the allowable production of gas for September, 1960, from six prorated pools in Lea County, New Mexico, also consideration of the allowable production of gas from seven prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for September, 1960.

CASE 1668: Application of Phillips Petroleum Company for an order promulgating special rules and regulations governing the drilling, spacing, and production of wells in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units for wells in said pool.

CASE 1947: (De Novo)

Application of the applicant, Phillips Petroleum Company, and the protestant, Tennessee Gas and Oil Company, for a hearing de novo in Case No. 1947, Order No. R-1683, relating to the application of Phillips Petroleum Company for two 80-acre non-standard oil proration units and one unorthodox oil well location in the Kemnitz-Wolfcamp Pool, Lea County, New Mexico.

CASE 1979: Application of El Paso Natural Gas Products Company for a hearing de novo before the Oil Conservation Commission in Case No. 1979, Order No. R-1699, which was an application by The Atlantic Refining Company for a pressure maintenance project in the Horseshoe-Gallup Oil Pool, San Juan County, New Mexico.

CASE 2049: In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit any interested party to appear and present testimony relative to the drilling, spacing, and production of wells in the Devils Fork-Gallup Pool, Rio Arriba County, New Mexico.

CASE 2050: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider amending Rule 505 (b) of the Commission Rules and Regulations to establish proportional (depth) factors for oil wells in excess of 14,000 feet.

CASE 2051: Application of Amanda E. Sims and George W. Sims for an order vacating the standard 160-acre Tubb gas unit created by Order No. R-1310 consisting of the NW/4 of Section 25, Township 22 South, Range 37 East, Lea County, New Mexico. Applicant further seeks the establishment of a 160-acre non-standard gas proration unit in the Tubb Gas Pool consisting of the SE/4 NW/4, E/2 SW/4 and SW/4 SW/4 of said Section 25.

CASE 1634: Application of The Pure Oil Company for an order promulgating special rules and regulations governing the drilling, spacing and production of wells in the South Vacuum-Devonian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units for wells in said pool.

CASE 2052: Southeastern New Mexico nomenclature case calling for an order creating new pools and extending existing pools in Eddy, Lea, and Roosevelt Counties, New Mexico:

(a) Create a new oil pool, designated as the East Benson-Yates Pool, and described as:

TOWNSHIP 19 SOUTH, RANGE 30 EAST, NMPM
Section 14: NE/4

(b) Create a new oil pool, designated as the Cass Draw-Delaware Pool, and described as:

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 12: SW/4

(c) Create a new oil pool, designated as the Grayburg Jackson-Abo Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 31 EAST, NMPM
Section 20: SW/4

(d) Create a new oil pool, designated as the Penasco-Wolfcamp Pool, and described as:

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM
Section 3: SE/4

(e) Extend the Bluitt-Pennsylvanian Pool, to include therein:

TOWNSHIP 8 SOUTH, RANGE 36 EAST, NMPM
Section 13: SE/4

(f) Extend the Corbin-Abo Pool, to include therein:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 31: NE/4
Section 32: N/2
Section 33: N/2 and SE/4

(g) Extend the Corral Canyon-Delaware Pool, to include therein:

TOWNSHIP 25 SOUTH, RANGE 30 EAST, NMPM
Section 8: S/2 SW/4
Section 17: NW/4

(h) Extend the Empire-Abo Pool, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 26: S/2
Section 31: NW/4
Section 33: NE/4
Section 35: NE/4 and SW/4

(i) Extend the Middle Lynch-Yates Pool, to include therein:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
Section 22: E/2 SW/4 and W/2 SE/4

(j) Extend the Paddock Pool, to include therein:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM
Section 18: SE/4

(k) Extend the North Square Lake-Grayburg Pool, to include therein:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
Section 2: SW/4
Section 3: SE/4
Section 10: NE/4

RECEIVED
JUL 15 1960
PRODUCTION
DEPARTMENT

Mobil Oil Company

A Division of Socony Mobil Oil Company, Inc.

Box 2406
Hobbs, New Mexico

July 12, 1960

Phillips Exh 16

Re: Hearing on
Ranger Lake Pennsylvanian

Phillips Petroleum Co.
Mr. L. E. Fitzjarrald
Vice President, Production Department
Bartlesville, Oklahoma

Dear Mr. Fitzjarrald:

We have been included by mistake on your mailing list of operators in the Ranger Lake - Pennsylvanian Pool, Lea County, New Mexico. We have no interest at all in this pool.

We are sorry that we cannot assist you in this matter.

Yours very truly,

SOCONY MOBIL OIL COMPANY, INC.

C. H. Samples

C. H. Samples
Producing Superintendent

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 16
CASE 1668

JCGordon/jwh

JOSEPH I. O'NEILL, JR.
OIL PROPERTIES

410 WEST OHIO
MIDLAND, TEXAS

TELEPHONE
MUTUAL 3-2771

Phillips Exh. 14

New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Re: Rangor Lake - Pennsylvanian Pool - Lea County,
New Mexico - Phillips Petroleum Company

Gentlemen:

We have been advised that a hearing is set for August 17, 1960, to consider a transfer of the present temporary special rules and regulations to a permanent basis.

Please be advised that we, as holders of oil and gas leases within the field, agree with the request of Phillips Petroleum Company and believe bottom hole pressure information has indicated this field should continue to be developed on 80-acre proration units. However, we do not agree with Rule No. 3 which states that the initial well on any 80-acre unit in said pool must be located within 150 feet of the center of either the NW/4 or the SE/4 of the quarter section on which the well is located. We believe that because of the wide spacing the operator should be permitted to stake his location on either of the two 40's comprising his 80-acre unit. We feel this change would more adequately protect the rights of all operators.

Very truly yours,

JOSEPH I. O'NEILL, JR.

E. T. Anderson

Ex. 14

ETA/nb

CC: Mr. L. E. Fitzjarrald
Phillips Petroleum Company
Bartlesville, Oklahoma

FORM 470 2-57

PAN AMERICAN PETROLEUM CORPORATION

Box 268
Lubbock, Texas
July 26, 1960

File: JET-4262-986.510.1

Subject: NMOCC Order R-1418-B
Temporary 80-Acre Spacing
Ranger Lake Field
Lea County, New Mexico

Phillips Exh. 15

Mr. L. E. Fitzjarrald
Phillips Petroleum Company
Bartlesville, Oklahoma

Dear Sir:

This will have reference to your letter of July 8, 1960, which requested bottom hole pressure and core data from the Ranger Lake Field for use in the forthcoming permanent 80-acre spacing case before the NMOCC.

The following initial bottom hole pressures were obtained on Pan American wells in this field:

Well	Date	BHP	Datum	Shut-In Time
		2903	-6050	
State "AZ" No. 1	November, 1959	2945 psig	-6179'	48 hrs.
State "AZ" No. 2	December, 1959	2795 psig	-6050'	24 hrs.
State "AZ" No. 3	December, 1959	2860 psig	-6050'	48 hrs.

We plan to have a representative present at this hearing to make a verbal statement in support of your application for permanent 80-acre spacing.

Yours very truly,

Neil S Whitmore

Neil S. Whitmore
District Superintendent

BJS:ab

Bolton

AMERADA PETROLEUM CORPORATION
P. O. BOX 2040
TULSA 2, OKLA.

July 18, 1960

Phillips Exh 13

Mr. L. E. Fitzjarrald
Phillips Petroleum Company
Bartlesville, Oklahoma

Dear Mr. Fitzjarrald:

Tabulated below is the bottom-hole pressure information requested on the Amerada Petroleum Corporation State WR "A" No. 1 well in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico.

Date	Depth	Observed Pressure	Gradient Psi 100'	Calculated Pressure @ 10,209' (-6050)	Hours Shut In
12-5-59	10,038	2761	28.8	2810	27
12-7-59	10,038	2767	28.4	2816	74
2-3-60	10,072	2598	23.4	2630	49
5-18-60	10,072	2471	26.4	2507	48

Amerada will appear at the hearing on August 17, and will make a statement in support of your application.

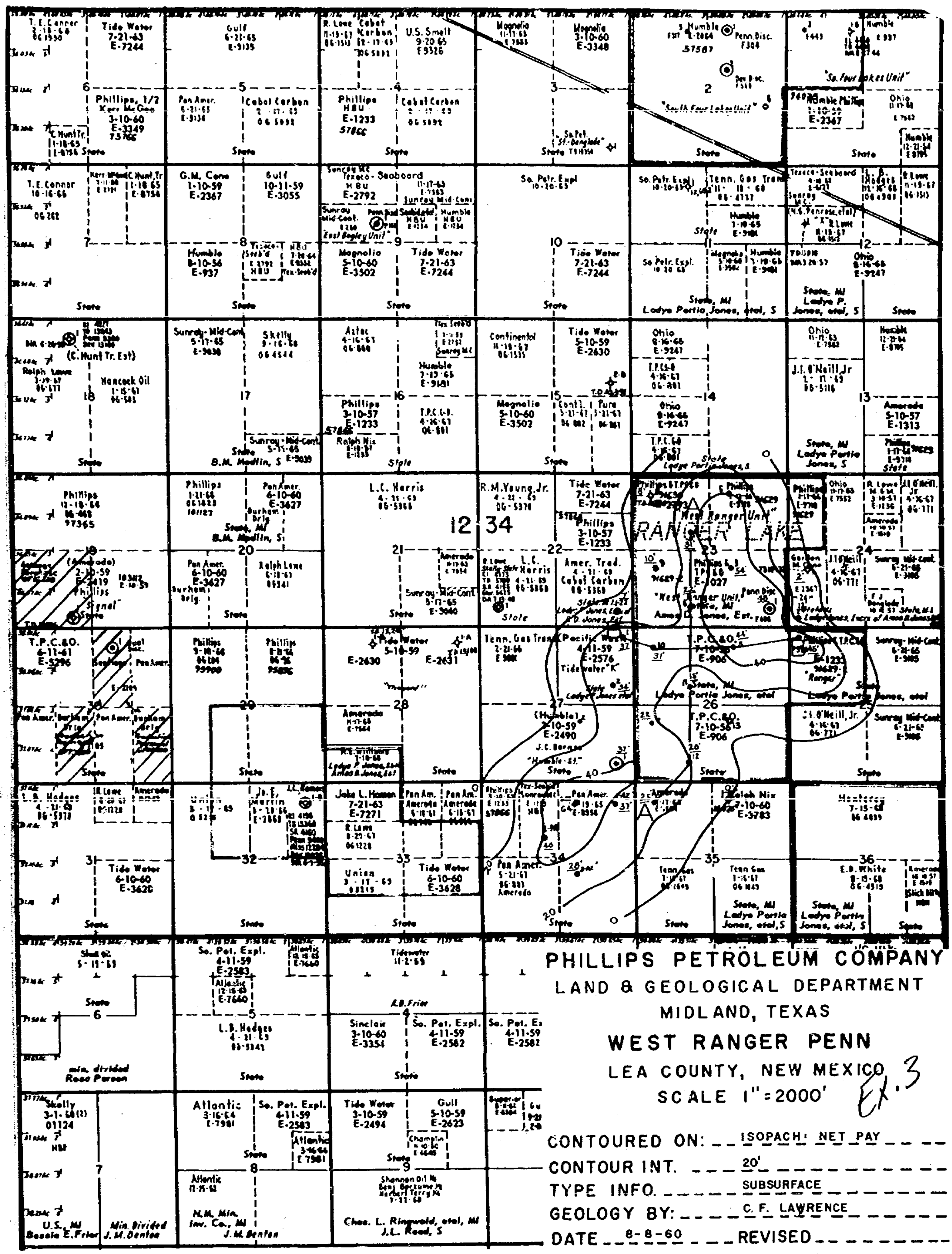
Yours very truly,

O. C. McBryde, Jr.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 13
CASE 1668

OCM:mtl

Ex. 13



PHILLIPS PETROLEUM COMPANY
LAND & GEOLOGICAL DEPARTMENT
MIDLAND, TEXAS
WEST RANGER PENN
LEA COUNTY, NEW MEXICO
SCALE 1" = 2000'
Ex. 3

CONTOURED ON: ISOPACH: NET PAY
CONTOUR INT. 20'
TYPE INFO. SUBSURFACE
GEOLOGY BY: C. F. LAWRENCE
DATE 8-8-60 REVISED

NET PAY DATA BASED ON: 4 % POROSITY
35% BASE SHALE

DRAFT

OEP/esr
August 23

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 1668
Order No. R- 1418-C

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR AN ORDER ESTABLISHING SPECIAL RULES AND REGULATIONS FOR THE RANGER LAKE-PENNSYLVANIAN POOL, LEA COUNTY, NEW MEXICO, TO PROVIDE FOR 80-ACRE PRORATION UNITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 17, 1960, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of August, 1960, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

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

(2) That by Order No. R-1418-B, the Commission promulgated temporary Special Rules and Regulations governing the drilling, spacing, and production of wells in the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, including the establishment of 80-acre proration units.

(3) That the applicant now seeks an order making said temporary Special Rules and Regulations permanent.

(4) That the data gathered since the entry of Order No. R-1418-B and presented in this case corroborates the conclusion of the Commission reached in said Order that the Ranger Lake-Pennsylvanian Pool can be efficiently and economically drained and developed on 80-acre proration units and that to require development of this Pool on 40-acre proration units would probably cause the drilling of unnecessary wells.

(5) That accordingly the Special Rules and Regulations for the Ranger Lake-Pennsylvanian Pool promulgated by Order No. R-1418-B, as well as the proviso relative to the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, should be made permanent.

IT IS THEREFORE ORDERED:

That the Special Rules and Regulations for the Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, promulgated by Order No. R-1418-B, as well as the proviso relative to the Gordon Cone Well No. 2-24, SW/4 SW/4 of Section 24, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, be and the same are hereby made permanent.

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