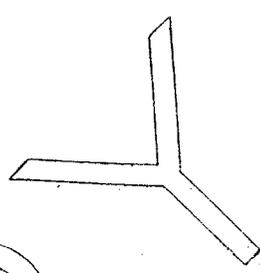


KS

Case 366

April 17, 1952

Messrs. Hervey, Dow and Minkle
White Building
Roswell, New Mexico



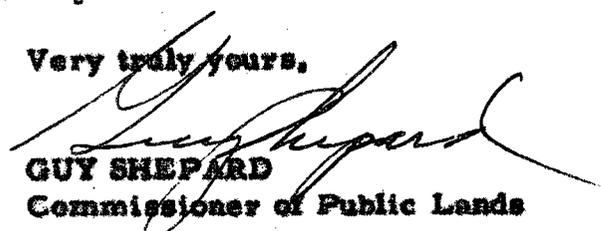
Attention: Mr. Clarence Minkle

Re: Proposed Pober Lake Unit Agreement
Richardson and Bass

Gentlemen:

This is to say that I have carefully examined the proposed Unit Agreement set out in the caption hereof, and find that it is in substantial compliance with requirements heretofore set up for similar projects; I am, however, withholding formal approval of the proposal until a formal hearing is had before the Oil Conservation Commission of New Mexico, of which I am ex-officio a member; at such hearing I will carefully consider the facts as presented.

Very truly yours,


GUY SHEPARD
Commissioner of Public Lands

vrnc

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
APR 21 1952
RECEIVED

RICHARDSON & BASS
FT. WORTH NAT'L BANK BLDG.
FORT WORTH, TEXAS

April 15, 1952

New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Gentlemen:

Attached you will find three copies of Application for Approval of Poker Lake Unit Agreement, Eddy County, New Mexico.

Attached as Exhibit "A" to each of these applications is a photostat of the letter received by us from the Director of the United States Geological Survey designating this area as an area suitable and proper for unitization.

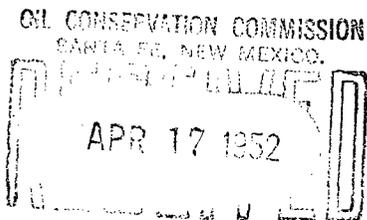
Also attached to each of these three applications, and marked Exhibit "B", is a copy of the application filed with the United States Geological Survey pursuant to which said lands were designated as an area suitable and proper for unitization. With Exhibit "B" is a map showing the results of our seismographic survey of this area, which is of a highly confidential nature.

On April 9, 1952, Mr. Clarence Hinkle, of Hervey, Dow & Hinkle, sent to you three copies of the proposed Unit Agreement to be used in conjunction with this application.

This partnership respectfully requests that a public hearing be held as set forth in the attached application.

By separate letter a similar Application for Approval of Big Eddy Unit Agreement, Eddy and Lea Counties, New Mexico is being sent to the Commission.

It is hoped that it will be convenient to the Commission to hold the requested hearings on this application and the Big Eddy application on the same day.



PRB/dn
Enc.

Very truly yours,

RICHARDSON & BASS

By

NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

APPLICATION FOR APPROVAL OF POKER LAKE UNIT AGREEMENT,
EDDY COUNTY, NEW MEXICO

New Mexico Oil Conservation Commission,
Santa Fe, New Mexico.

Comes the undersigned, RICHARDSON & BASS, a co-partnership of Fort Worth, Texas, and files herewith three copies of a proposed Unit Agreement for the development and operation of the Poker Lake Unit Area, Eddy County, New Mexico, and hereby makes application for the approval of said Unit Agreement by the New Mexico Oil Conservation Commission as provided by law, and in support thereof shows:

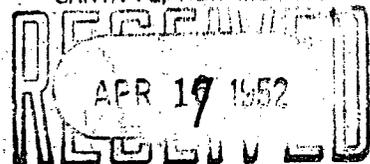
1. That the proposed unit area covered by said agreement comprises 68,990.83 acres, more or less, more particularly described as follows:

NEW MEXICO PRINCIPAL MERIDIAN, NEW MEXICO

Twp. 24 S., Rge. 29 E.

Sec. 12: $E\frac{1}{2}$
Sec. 13: $E\frac{1}{2}$
Sec. 24: $E\frac{1}{2}$
Sec. 1 : Lot 1, $SE\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}$

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO.



Twp. 23 S., Rge. 30 E.

Sec. 31: $SE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$
Sec. 32: All
Sec. 33: All
Sec. 34: $W\frac{1}{2}W\frac{1}{2}$

Twp. 24 S., Rge. 30 E.

Sec. 2: $S\frac{1}{2}$
Secs. 3 to 11, both inclusive: All
Secs. 14 to 36, both inclusive: All

Twp. 25 S., Rge. 30 E.

Secs. 1 to 4, both inclusive: All
Sec. 5: Lots 1, 2, 3 and 4, $S\frac{1}{2}N\frac{1}{2}$, $E\frac{1}{2}SE\frac{1}{4}$
Sec. 8: $E\frac{1}{2}E\frac{1}{2}$, $W\frac{1}{2}SE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$
Sec. 9 to 17, both inclusive: All
Sec. 18: Lots 3 and 4, $NE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$, $SE\frac{1}{4}$
Secs. 19 to 29, both inclusive: All
Sec. 30: $NE\frac{1}{4}$, $E\frac{1}{2}SE\frac{1}{4}$
Sec. 31: $E\frac{1}{2}NE\frac{1}{4}$
Secs. 32 to 36, both inclusive: All

Twp. 26 S., Rge. 30 E.

Secs. 1 to 3, both inclusive: All
Sec. 4: NE $\frac{1}{4}$
Sec. 10: N $\frac{1}{2}$
Sec. 11: N $\frac{1}{2}$
Sec. 12: N $\frac{1}{2}$

Twp. 24 S., Rge. 31 E.

Secs. 19 to 22, both inclusive: All
Secs. 27 to 33, both inclusive: All
Sec. 34: W $\frac{1}{2}$

Twp. 25 S., Rge. 31 E.

Sec. 3: Lots 3 and 4, S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$
Secs. 4 to 9, both inclusive: All
Sec. 10: W $\frac{1}{2}$
Sec. 15: W $\frac{1}{2}$ W $\frac{1}{2}$
Secs. 16 to 21, both inclusive: All
Sec. 22: NW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$
Sec. 27: W $\frac{1}{2}$ W $\frac{1}{2}$
Secs. 28 to 33, both inclusive: All
Sec. 34: S $\frac{1}{2}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$

Twp. 26 S., Rge. 31 E.

Sec. 3: W $\frac{1}{2}$ NW $\frac{1}{4}$
Secs. 4 to 6, both inclusive: All

That of the above described land 60,007.19 acres are Federal lands or part of the Public Domain, and 8,863.64 acres are lands of the State of New Mexico, and 120 acres are fee or privately owned lands.

2. That said area has heretofore been designated by the Director of the United States Geological Survey as an area suitable and proper for unitization, a copy of the letter so designating said area being attached hereto, made a part hereof, and for purposes of identification marked Exhibit "A".

That there is also attached hereto, made a part hereof, and for purposes of identification marked Exhibit "B", a copy of Application filed with the United States Geological Survey pursuant to which said lands were designated as an area suitable and proper for unitization together with a plat showing the result of a seismographic survey made of the area by applicant at a great deal of expense and which applicant requests be treated as confidential.

3. That applicant believes and upon such information and belief states that the proposed unit area covers substantially all of the geological features involved, and in the event of the discovery of oil or gas thereon, that said Unit Agreement will afford effective control of the entire structure.

4. That Richardson & Bass, a co-partnership, is designated as Unit Operator in said Unit Agreement, and as such is given authority under the terms thereof to carry on all operations necessary for the development and operation of the unit area for oil and gas subject to all applicable laws and regulations. That said Unit Agreement provides for the commencement of a test well for oil and gas upon some part of the lands embraced in the unit area within six months from the effective date thereof and for the drilling of said well with due diligence until the Ordovician formations have been tested, however, Operator is not required to drill said well to a depth in excess of 12,000 feet.

5. That said Unit Agreement is in substantially the same form as Unit Agreements heretofore approved by the Commissioner of Public Lands of the State of New Mexico and by the New Mexico Oil Conservation Commission. It is believed that in the event oil or gas in paying quantities is discovered on the lands within the unit area that the field or area can be developed more economically and efficiently under the terms of said agreement to the end that the maximum recovery may be obtained and that the agreement will be in the interest of the conservation of oil and gas and the prevention of waste as contemplated by the New Mexico Oil Conservation statutes.

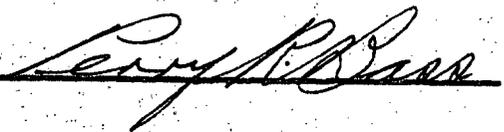
6. That upon an order being entered by the New Mexico Oil Conservation Commission approving said Unit Agreement and after approval thereof by the Commissioner of Public Lands of the State of New Mexico and the Director of the United States Geological Survey, an executed and approved copy thereof will be filed with the New Mexico Oil Conservation Commission.

WHEREFORE, the undersigned applicant respectfully requests that a public hearing be held on the matter of the approval of said Unit Agreement as provided by the statutes of the State of New Mexico and the regulations of the New Mexico Oil Conservation Commission, and that upon said hearing said Unit Agreement be approved by the New Mexico Oil Conservation Commission.

Respectfully submitted,

RICHARDSON & BASS

By





UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

Poker Lake Unit
IN REPLY REFER TO:

FEB 8 1952

Richardson & Bass
Ft. Worth Nat'l. Bank Bldg.
Fort Worth, Texas

Gentlemen:

Reference is to your application of January 15, 1952, filed with the Oil and Gas Supervisor, Roswell, New Mexico, requesting designation of approximately 71,316 acres in Eddy and Lea Counties, New Mexico, as logically subject to exploration and development under the unitization provisions of the Mineral Leasing Act, as amended.

68,990.83 Ac

Pursuant to regulations of December 22, 1950, 30 C.F.R., section 226.3, the land hereinafter described is designated as a logical unit area, to be known as the Poker Lake unit area. The area proposed has been modified by the addition of the $W\frac{1}{2}$ sec. 34, T. 24 S., R. 31 E., and the $W\frac{1}{2}$ sec. 3, T. 25 S., R. 31 E., N.M.P.M., and the elimination of the following described land:

New Mexico Principal Meridian, New Mexico

- T. 23 S., R. 30 E.
sec. 28, $SE\frac{1}{4}$ ✓
- T. 24 S., R. 31 E.
sec. 14, $SW\frac{1}{4}$ ✓
sec. 15, $SE\frac{1}{4}$ ✓
sec. 23, $N\frac{1}{2}NW\frac{1}{4}$ ✓
- T. 25 S., R. 31 E.
sec. 22, $SE\frac{1}{2}SW\frac{1}{4}$, $SE\frac{1}{4}$ ✓
sec. 23, $W\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{2}NE\frac{1}{4}$, $W\frac{1}{2}$, $SE\frac{1}{4}$ ✓
sec. 24, $S\frac{1}{2}N\frac{1}{2}$, $S\frac{1}{2}$ ✓
sec. 25, $NW\frac{1}{2}NE\frac{1}{4}$, $NW\frac{1}{4}$ ✓
sec. 26, $N\frac{1}{2}$ ✓
sec. 27, $N\frac{1}{2}NE\frac{1}{4}$, $NE\frac{1}{2}NW\frac{1}{4}$ ✓
- T. 25 S., R. 32 E.
sec. 19, $S\frac{1}{2}N\frac{1}{2}$, $S\frac{1}{2}$ ✓

Exhibit "A"

EXHIBIT NO. *u*

The area herein designated now may be described as follows:

- T. 24 S., R. 29 E.
sec. 1, Lot 1, SE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ ✓
sec. 12, E $\frac{1}{2}$ ✓
sec. 13, E $\frac{1}{2}$ ✓
sec. 24, E $\frac{1}{2}$ ✓
- T. 23 S., R. 30 E.
sec. 31, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ ✓
secs. 32 and 33, all ✓
sec. 34, W $\frac{1}{2}$ W $\frac{1}{2}$ ✓
- T. 24 S., R. 30 E.
sec. 2, S $\frac{1}{2}$ ✓
secs. 3, 4, 5, and 6, all ✓
secs. 7, 8, 9, 10, and 11, all ✓
secs. 14 to 36, inclusive, all ✓
- T. 25 S., R. 30 E.
secs. 1, 2, 3, and 4, all ✓
sec. 5, Lots 1, 2, 3, and 4, S $\frac{1}{2}$ N $\frac{1}{2}$, E $\frac{1}{2}$ SE $\frac{1}{4}$ ✓
sec. 8, E $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ ✓
secs. 9 to 17, inclusive, all ✓
sec. 18, Lots 3 and 4, NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ ✓
secs. 19 to 29, inclusive, all ✓
sec. 30, NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$ ✓
sec. 31, E $\frac{1}{2}$ NE $\frac{1}{4}$ ✓
secs. 32, 33, 34, 35, and 36, all ✓
- T. 26 S., R. 30 E.
secs. 1, 2, and 3, all ✓
sec. 4, NE $\frac{1}{4}$ ✓
sec. 10, N $\frac{1}{2}$ ✓
sec. 11, N $\frac{1}{2}$ ✓
sec. 12, N $\frac{1}{2}$ ✓
- T. 24 S., R. 31 E.
secs. 19, 20, 21, and 22, all ✓
secs. 27 to 33, inclusive, all ✓
sec. 34, W $\frac{1}{2}$ ✓
- T. 25 S., R. 31 E.
sec. 3, Lots 3 and 4, S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ ✓
secs. 4 to 9, inclusive, all ✓
sec. 10, W $\frac{1}{2}$ ✓
sec. 15, W $\frac{1}{2}$ W $\frac{1}{2}$ ✓
secs. 16 to 21, inclusive, all ✓

sec. 22, NW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$ ✓
sec. 27, W $\frac{1}{2}$ W $\frac{1}{2}$ ✓
secs. 28 to 33, inclusive, all ✓
sec. 34, NW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ ✓

T. 26 S., R. 31 E.

sec. 3, W $\frac{1}{2}$ NW $\frac{1}{4}$ ✓
secs. 4, 5, and 6, all ✓

The proposed depth of 12,000 feet for testing the Ellenburger limestone is considered acceptable.

Inasmuch as you intend to use the standard form with modifications heretofore approved as applicable to State lands, preliminary approval as to form is unnecessary. However, for obvious reasons, it is requested that the following paragraph be inserted in the agreement as Section 2(e) thereof:

"After ten years from the date of discovery of unitized substances in paying quantities, the Director and Commissioner shall have the right to determine the acreage believed to be proved productive in formations subject to this agreement and may declare acreage not believed to be productive as no longer subject to this agreement by appropriate notice to the Unit Operator provided, however, no elimination of acreage shall be made so long as Unit Operator is actually and diligently engaged in expanding the productive limits within the unit area."

In the absence of any objections not now apparent, a duly executed standard-form agreement, modified as herein stated and requested, will be approved if submitted within a reasonable period of time. However, notice is hereby given that the right is reserved to deny approval of any executed agreement which, in the Survey's opinion, does not have the full commitment of sufficient lands to afford effective control of unit operations.

When the executed agreement is transmitted to the Supervisor for approval, include the latest status of all Federal acreage showing the current record owner of all issued leases and the current status of all lease applications, if any.

Very truly yours,

Thomas B. Nolan

Acting Director

APPLICATION FOR THE DESIGNATION OF A

UNIT AREA (UNPROVEN)

POKER LAKE SEISMOGRAPH STRUCTURE

EDDY AND LEA COUNTIES, NEW MEXICO

An application for the designation of a unit area subject to logical development under a unit or cooperative agreement, as outlined under Unit Plan Regulations, is hereby respectfully presented by the partnership of Sid W. Richardson and Perry R. Bass in the above designated area. The area is more particularly described as centering 18 miles south and 23 miles east of the town of Carlsbad, Eddy County, New Mexico, and falling in Townships 23, 24, 25 and 26 South, Ranges 29, 30, 31 and 32 East.

Although there has been some slight indication of structure in the area under consideration, the presence of an important deep-seated structure has been obscured by the sedimentary dips and conditions of deposition associated with the Upper Permian beds in this part of the Delaware Basin. As no drilling of sufficient depth has been done in the area to indicate the presence of structure below the Delaware formation, we can only speculate as to the shallowest stratigraphic sequence which has been influenced by the uplift.

A reflection seismograph map, designated as Map No. 1 in this report, is attached. This map shows a large faulted anticline having a minimum closure of 1000 feet and covering an area of some 71,000 acres. In each instance the minus values and contours indicate the minimum dips that could be taken from the seismograph

profiles. We have reasons to believe that the application of logical techniques by experienced personnel, together with the presence of dips of magnitudes several times the margin of error, lends an accuracy to the seismograph mapping unusual in a difficult shooting area. The proposed unit area is shown enclosed by the orange and blue lines.

A fee ownership map, designated as Map No. 2 in this report, shows the outline of the proposed unit area, the surveyed acreage in each section, and the surveyed acreage in each sectional subdivision as recorded in the United States Department of Interior Land Management Division. The purpose in presenting this map is to show accurately the number of acres in the proposed unit and the percentage of Federal, state and patented land involved.

Accompanying this report there is a columnar section, designated Plate I, showing what is believed to be the maximum stratigraphic section likely to be present on some portion of this anticline. This section has been compiled with the data from an actual well sample examination of the cuttings obtained from the Humble Oil and Refining Company's No. 1 Federal-Wiggs, Section 31, Township 24 South, Range 27 East, Eddy County, New Mexico, and located 23 miles west of the crest of the anticline as mapped by seismograph. In view of the magnitude of the uplift in the Poker Lake anticline area and taking into consideration the thinning of the stratigraphic section in other known and proven areas of similar uplift, we anticipate considerable thinning, even truncation, of some segments

of the formations below the top of the Lower Permian. It can be shown from several case histories that the greatest amounts of convergence and divergence occur in the Lower Permian and throughout the Pennsylvanian formations. We anticipate considerable convergence of the Pennsylvanian and lower Permian formations over this structure with possibilities of truncation in the Pre-Permian beds. The apparent large range of possibilities with regard to the thickness of sediments to be penetrated leads us to offer a maximum and a minimum stratigraphic section to be penetrated. The maximum thickness of sedimentary beds penetrated in a flank well would be similar to that encountered in the Humble well mentioned above. A tabulation of the formations and the depths at which they would be encountered follows:

<u>Formation</u>	<u>Depth</u>	<u>Thickness</u>
Base Salt	4090'	—
Top Delaware Mountain	4330'	3000'
Top Bone Spring (Leonard)	7330'	2980'
Top Wolfcamp	10310'	670'
Top Pennsylvanian	10980'	1680'
Top Mississippian	12660'	690'
Top Devonian	13350'	1110'
Top Montoya	14460'	240'
Top Simpson	14700'	250'
Top Ellenburger	14950'	—

Deep drilling in the West Texas Permian Basin area has disclosed that certain Pre-Permian beds are more likely to be missing on the crest of major uplifts than are others. The following tabulation shows the age of beds most likely to be present on top of the structure without truncation, in the order of the highest probability of their presence:

1. Ellenburger (Ordovician)
2. Simpson (Ordovician)
3. Siluro-Devonian
4. Pennsylvanian
5. Mississippian

Due to the lack of reliable velocity data in the area, it is hazardous to estimate the depth or age of formations that are being mapped seismically. However, we have prepared a west - east schematic cross section, designated as Plate II, which shows the dips as indicated by seismograph on the Pre-Permian formations encountered (with the exception of the Pre-Cambrian granite) in the Humble Oil and Refining Company's No. 1 Federal-Wiggs test referred to above. We consider the possibility of Lower Permian beds resting on Pre-Cambrian granite on top of the structure to be good and it can not be ruled out by the data available. If the Pre-Permian beds are present on top of the Pre-Cambrian granite uplift, it is highly probable that a gas cap of considerable proportions will be present as illustrated in the Cross Section of the Keystone Field, Winkler County, Texas, shown here as Plate III. To complete the case history of the Keystone Field we enclose a subsurface structural map, Plate IV, contoured on the top of the Ellenburger dolomite. Plate V, for the purpose of this report, is a schematic cross section showing Lower Permian resting on Pre-Cambrian granite. The cross section is in reality a portion of the Central Basin Platform showing the deformation of southeastern Lea County, New Mexico, a reprint from Plate I, Bulletin 23, New Mexico State Bureau of Mines and Mineral Resources.

Even though there is a definite possibility of encountering shallow granite and a resulting abbreviated sedimentary section similar to that illustrated by Plate V, we have tabulated the sedimentary section shown below. We believe this to be the one most likely to be encountered in a productive area outside of a gas cap. In the event of shallow granite, most of the exploratory drilling for flank production would take place in a flank area having an average sedimentary section as indicated below.

Minimum Section

<u>Formation</u>	<u>Depth</u>	<u>Thickness</u>
Base Salt	4090'	-----
Top Delaware	4330'	3000'
Top Bone Springs (Leonard)	7330'	2980'
Top Devonian	10310'	1000'
Top Montoya	11310'	200'
Top Simpson	11510'	250'
Top Ellenburger	11760'	-----

We propose to allocate our drilling under the following conditions. It is possible, although not probable, that a full sedimentary section as found in the Humble Oil and Refining Company's No. 1 Federal-Wiggs dry hole could be found at the apex of the Poker Lake Structure. In the event that a well on the apex of the structure is not in lower Pennsylvanian at 12,000 feet, the presence of important structure from our seismograph interpretation, within economic drilling limits, would be remote; particularly, if no shows of oil or gas were encountered at shallower depths; and the feasibility of further drilling would be questionable. On the other hand, should

a test well near the apex of the structure show that known reservoir beds are not present due to the intrusion of granite, then one or more test wells located on the flank of the seismograph structure will be considered to test for production in stratigraphic traps due to truncation, thinning of the beds or faulting. The depth to which these additional or flanking tests would be drilled is dependent upon the depth of the first major unconformity, the penetration of which would disclose the greatest amount of deformation. It is anticipated that this point would be Pre-Permian in age.

In conclusion, we summarize the pertinent facts supporting this application for unitization as follows: First, it is evident that there has been presented sufficient data to outline the presence of deep-seated structure approaching an anticlinorium in size; Second, that in the event of unitization, we would drill a test to a depth of 12,000 feet, or water in the Ellenburger formation, provided commercial production, granite or an impenetrable formation is not encountered at a shallower depth; and Third, that should a test well on the top of the structure prove up shallow granite, any possible resultant stratigraphic reservoirs which were thought to be present would require further exploration.

Respectfully submitted,

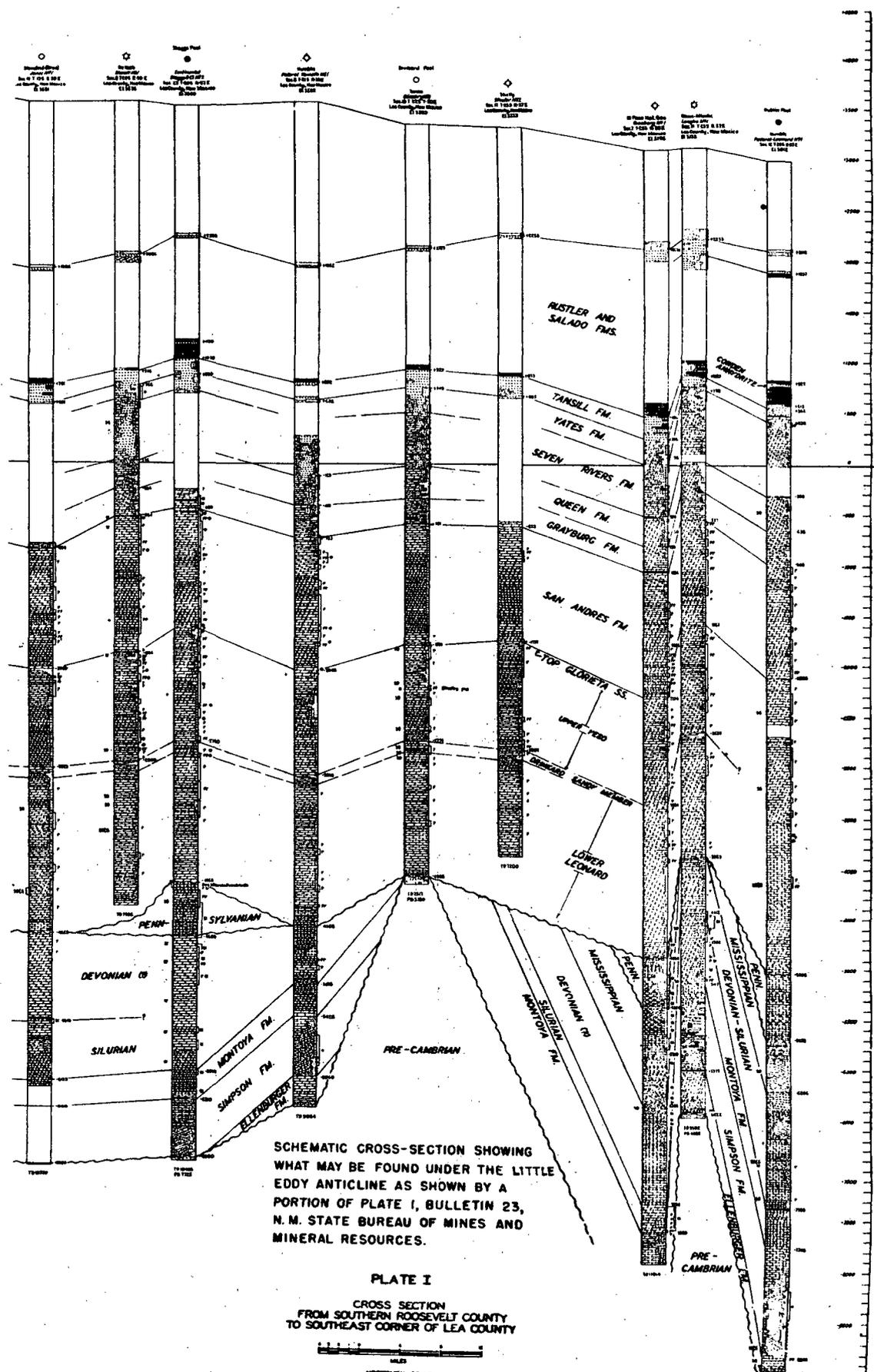
PARTNERSHIP OF RICHARDSON AND BASS

SID W. RICHARDSON

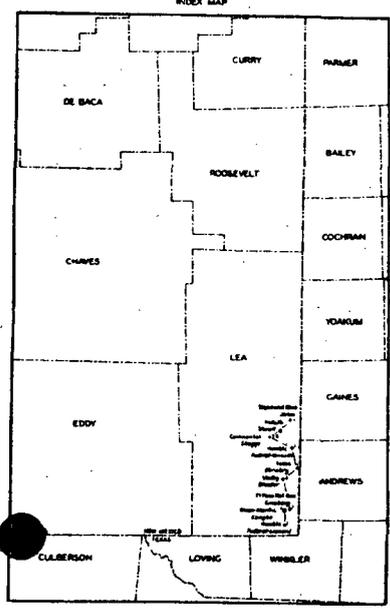
PERRY R. BASS

Fort Worth, Texas
January 15, 1952

PLATE V



- LEGEND**
- Limestone
 - Sandstone
 - Shale
 - Coal
 - Salt
 - Argillite
 - Chert
 - Igneous Rock
 - Quartzite
 - Crystalline Rock
 - Water
 - Shore of the State of New Mexico
 - River
 - Fault
 - Oil Well
 - Gas Well
 - Prospect Well
 - Salt Well
 - Water Well



SCHMATIC CROSS-SECTION SHOWING WHAT MAY BE FOUND UNDER THE LITTLE EDDY ANTICLINE AS SHOWN BY A PORTION OF PLATE I, BULLETIN 23, N. M. STATE BUREAU OF MINES AND MINERAL RESOURCES.

PLATE I
CROSS SECTION FROM SOUTHERN ROOSEVELT COUNTY TO SOUTHEAST CORNER OF LEA COUNTY

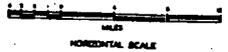
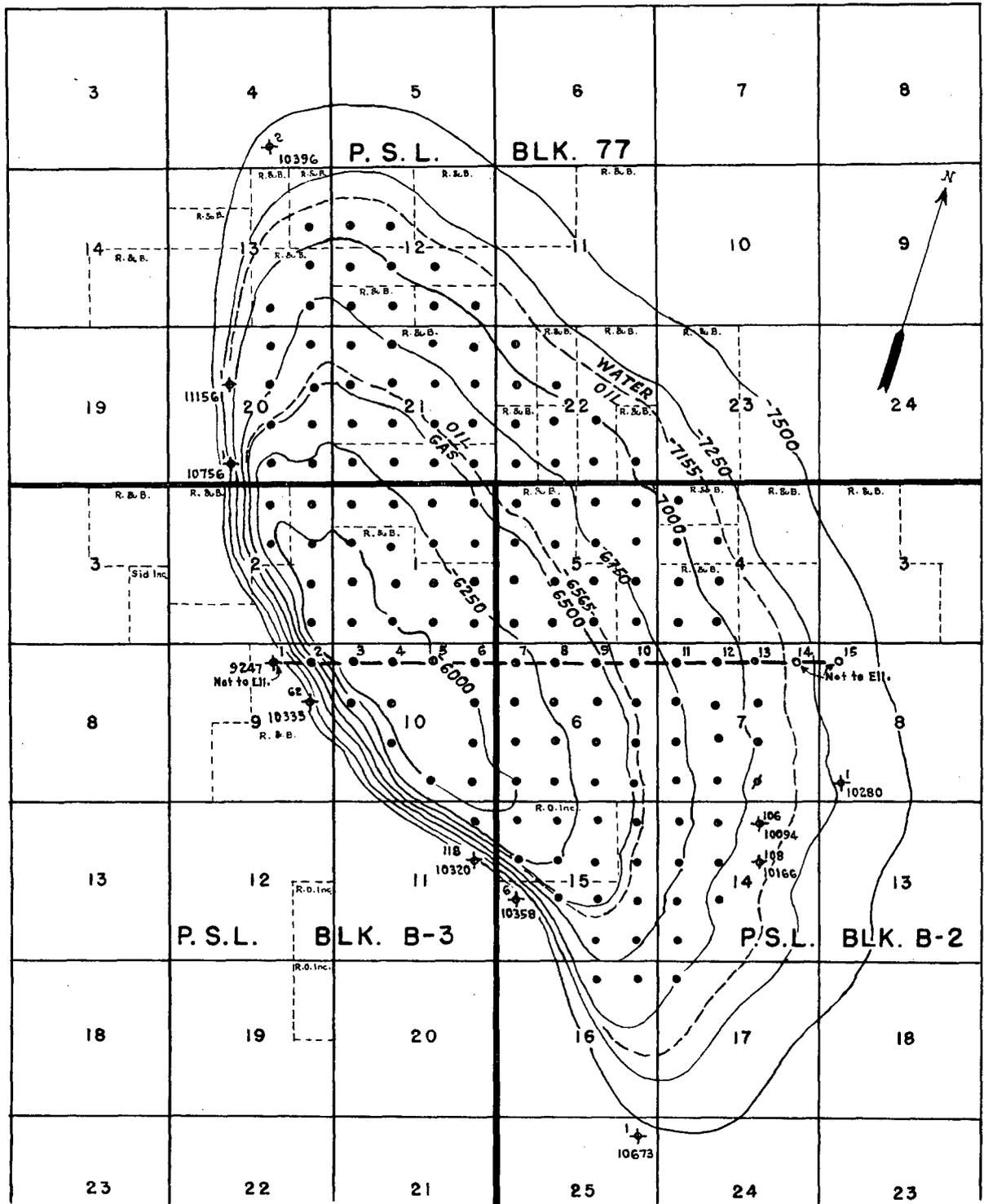


PLATE IV



KEYSTONE FIELD
WINKLER CO. TEXAS
CONTOURS ON ELLENBURGER
INTERVAL - 250 FEET

KEYSTONE PRE-PERMIAN PAY ZONES

PLATE

SW



-4000 FEET SEA LEVEL DATUM

Gas-Oil Contact

Gas-Oil Contact

Oil-Water Contact

PRE-CAMBRIAN

Oil-Water Contact

LOWER ORDOVICIAN

MIDDLE ORDOVICIAN

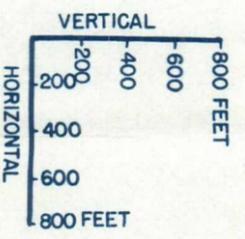
UPPER ORDOVICIAN

SHEURAM

MISSISSIPPIAN
DEVONIAN

PERMIAN

TOP OF TUBB HORIZON



LEGEND
OIL
GAS
WATER

7000 -

DELAWARE MOUNTAIN GROUP

PLA

8000 -

9000 -

BONE SPRING - LEONARD

10000 -

11000 -

WOLFCAMP

12000 -

PENNSYLVANIAN

13000 -

MISSISSIPPIAN

14000 -

SILURO - DEVONIAN

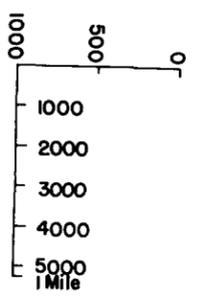
15000 -

MONTOYA
SIMPSON

16000 -

ELLENBURGER

PRE-CAMBRIAN



POKER LAKE ST

WEST

