

NORTHEAST LYNCH UNIT
LEA COUNTY, NEW MEXICO
GEOLOGICAL REPORT

PURPOSE

The various interested parties propose the formation of this unit in order to drill a 14,700' exploratory well at a location 1980' FNL and 660' FEL of Section 17, T-20-S, R-35-E, Lea County, New Mexico. This test is designed to explore for oil and/or gas in the thick sedimentary section down to and including the Devonian and will evaluate all of the known producing zones in the immediate area.

REGIONAL GEOLOGY

The Northeast Lynch Unit is located 22 miles southwest of Hobbs, New Mexico, and lies in the extreme southeastern portion of an area often designated as the Carlsbad Shelf. During all or a part of Guadalupian-Permian time, this province was a "back-reef" or shelf facies lying north of the Guadalupian reef complex and west of the Central Basin Platform. Sediments of the lower Guadalupian, Pre-Guadalupian Permian and Pennsylvanian are of a basinal environment and are typical of Delaware Basin deposition. The earlier Paleozoic rocks in this vicinity are generally similar to those found over vast areas of southeastern New Mexico and western Texas.

In the shallow beds regional dip is to the south at 100' to 150' per mile. In this immediate area dip in the deeper horizons is to the south-southwest toward the Delaware Basin trough at a rate of approximately 250-300 feet per mile. Lack of deep well control and a high concentration of Pre-Permian tests in areas of sharp local structural relief precludes accurate determination of regional dip in the earlier Paleozoics.

LOCAL GEOLOGY

This exploratory test will be located one and one-half miles south of the southern extension of the Pearl (Queen) Field and two and one-half miles east-southeast of present production in the Lea Unit producing area. Production in the Lea Unit was first obtained in 1960 by the Ohio No. 1 Lea Unit. This well was completed as a dual oil well from the Devonian and Bone Spring. To date oil production in the area has been established from two zones in the Bone Spring, and from the Devonian. Gas condensate is produced from clastic zones within the Lower Pennsylvanian (Bend). This field is still active and at present contains 10 productive wells, eight of which have been completed as dual producers. All information indicates the Lea Unit contains excellent hydrocarbon reserves.

STRUCTURE

Subsurface mapping on the Yates sand, utilizing shallow well control, reveals prominent structural nosing across the prospective area. This feature is primarily dictated by the datum on the Stoltz No. 1 Hudson-Federal (Section 17, T-20-S, R-35-E) which is located near the center of the unit area and was abandoned in the Seven Rivers section at 4,158 feet. Whether structure at the Yates level is in any way diagnostic of the deeper horizons is problematical, but the shallow positive feature is at least encouraging, especially in view of the fact that the Yates exhibits some structural closure over a portion of the producing area at the Lea Unit.

Due to lack of deep well control the structure at depth must be evaluated primarily on the basis of a reflection seismic survey (Exhibit 1) which was initiated in 1959. This program was conducted utilizing the top of the Mississippian lime, which is 800 feet above the Devonian in the stratigraphic section, as a mapping horizon. Structure revealed in the Mississippian shows good configuration with the underlying Devonian.

The seismic program disclosed two excellent deep seated positive anomalies. Shortly thereafter the westernmost of these was found productive by the Ohio No. 1 Lea Unit, which was drilled on the apex of the indicated seismic structure. The easternmost of the two features has never been tested by a deep well, and this unit is proposed in order that a deep exploratory test may be drilled to evaluate this prime prospect. The seismic study in the Northeast Lynch Unit area revealed a generally circular structural high which is slightly elongated along a northwest-southeast axis. At Mississippian depth approximately 250 feet of closure is shown, and the top of the structure is believed to be at least 100 feet higher subsea than the Lea Unit area. The northern end is delineated primarily by major east-west down to the north faulting. Strong evidence of down to the west faulting is present along the western side of the area. Evidence that the Northeast Lynch Unit structure is separate from the Lea Unit is shown not only by the geophysical interpretation but also by the Sinclair No. 1 Federal Lea 6025 (Section 7, T-20-S, R-35-E). This well was drilled between the two areas and is over 400 feet low on the Devonian to the Lea Unit discovery. The Sinclair well was plugged after testing salt water in the Devonian and finding all other possible producing horizons either water bearing or non-porous. The seismic data indicates the Northeast Lynch Unit well should encounter the Mississippian 500 feet structurally higher than in the Sinclair well.

STRATIGRAPHY

The thick sedimentary section present in the area is highly attractive in that numerous zones may logically be considered as prospective producing horizons. A generalized stratigraphic columnar section of the Permian through Devonian is as follows:


<u>Approximate Depths</u>	<u>Lithology</u>	<u>Formation</u>	<u>Geological Series & System</u>
1,500' - 3,750'	Red beds, anhydrite and salt	Dewey Lake and Salado	Ochoa-Permian
3,750' - 5,500'	Anhydrite, dolomite, dolomitic limes and erratic clastic members	Tansill through San Andres	U. Guadalupe-Permian
5,500' - 8,200'	Sandstone facies with thin impure carbonates and shale	Delaware Mt.	L. Guadalupe-Permian
8,200' - 10,900'	Predominately carbonates with moderately thick sections of sand, silt and shale clastics	Bone Spring	Leonard-Permian
10,900' - 11,600'	Limestone, shaly limes and limey shales	Hueco	Wolfcamp-Permian
11,600' - 12,000'	Limey dark shales and thin impure limestones		Cisco & Canyon-Pennsylvanian
12,000' - 12,300'	Limestone and thin dark shales		Strawn-Pennsylvanian
12,300' - 13,150'	Clastics consisting of dark shales and thin to moderate sandstone beds, thin to moderate carbonate sections		Bend-Pennsylvanian
13,150' - 13,500'	Dark shales and very thin impure carbonates		Mississippian
13,500' - 14,100'	Siliceous carbonates	"Mississippian Lime"	Mississippian
14,100' - 14,300'	Dark shales	Woodford	Mississippian or Devonian
14,300' - 14,700'	Limestones and porous dolomites		Devonian

SUMMARY

This test and unit are located in a portion of Southeastern New Mexico which is the scene of a rapidly increasing exploratory program in search of hydrocarbon reserves in the lower Permian and Pre-Permian sections. The Lea Unit to the west established the deepest oil production to date in the State of New Mexico, and it is obvious the field will contain large oil reserves.

The seismic program disclosed two large positive anomalies in the deeper beds. The westernmost of these is now productive at the Lea Unit, which produces oil from the Devonian and Bone Spring and gas condensate from the Lower Pennsylvanian (Bend). The easternmost of these structures, which underlies the Northeast Lynch Unit, has never been tested by a deep well. The thick sedimentary section and the numerous oil and gas shows encountered in the general area indicate that several prolific zones may be found productive in a structurally high well.

The character and relief of the positive feature and the numerous possible producing horizons make this a very attractive prospect.



A. F. McDade
Geologist - Union Producing Company

Attachment:

Exhibit 1. Seismic map

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 871
SANTA FE

October 31, 1962

Mr. Clarence Hinkle
Hervey, Dow & Hinkle
Attorneys at Law
Box 10
Roswell, New Mexico

Re: Case No. 2677
Order No. R-2351
Applicant:
Union Producing 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



IN REPLY REFER TO:

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

SEP 25 1962

Hervey, Dow & Hinkle
Box 10
Roswell, New Mexico

Attention: Mr. Clarence E. Hinkle

Gentlemen:

Your application of August 6 filed with the Regional Oil and Gas Supervisor, Roswell, New Mexico on August 7, in behalf of Union Producing Company, requests the designation of 3,040 acres, more or less, Lea County, New Mexico, as logically subject to exploration and development under the unitization provisions of the Mineral Leasing Act, as amended.

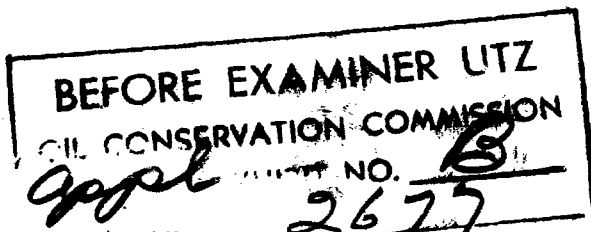
Pursuant to Unit Plan Regulations of December 22, 1950, 30 CFR 226.3 (1961 reprint), the land requested as outlined on the land map accompanying your application marked "Proposed Northeast Lynch Unit, Lea County, New Mexico" is hereby designated as a logical unit area.

The 1961 reprint of the standard form unit agreement should be used with the addition of the language required by the State of New Mexico and the following modifications:

1. The "Drilling to Discovery" section should require the drilling of the initial test well to test formations of Devonian age or to a depth of 15,000 feet.
2. The "Fair Employment" section should be replaced with the following new section:

"Nondiscrimination. In connection with the performance of work under this agreement, the operator agrees to comply with all of the provisions of section 301 (1) to (7) inclusive, of Executive Order 10925 (26 F. R. 1977), which are hereby incorporated by reference in this agreement."

3. As proposed by your application, item 6(b) (beginning on line 5, page 7 of the 1961 reprint) should be modified to read:



"(b) the selection shall have been filed with the Supervisor. If no successor unit operator is selected and qualified as herein provided, the Director at his election may declare this unit agreement terminated."

In the absence of any other type of land requiring special provisions or of any objections not now apparent, a duly executed agreement identical with said form, modified as outlined above, will be approved if submitted in approvable status within a reasonable period of time. However, the right is reserved to deny approval of any executed agreement which, in our opinion, does not have 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 acreage. The format of the sample exhibits attached to the 1961 reprint of the standard form should be followed closely in preparation of Exhibits A and B.

Inasmuch as the unit area contains State of New Mexico lands, a copy of this letter is being directed to the Commissioner of Public Lands of the State of New Mexico at Santa Fe. Please contact the Commissioner of Public Lands in connection with this letter before soliciting joinders.

Very truly yours,

A handwritten signature in dark ink, appearing to read "A. H. Lydell", written in a cursive style.

Acting Director

J. M. HERVEY 1874-1953
HIRAM M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. HUNKER, JR.
HOWARD C. BRATTON
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.

LAW OFFICES
HERVEY, DOW & HINKLE
HINKLE BUILDING
ROSWELL, NEW MEXICO

TELEPHONE MAIN 2-6510
POST OFFICE BOX 10

October 6, 1962

Case 2677

Via Airmail

Mr. A. L. Porter, Jr.
Director,
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Northeast Lynch Unit Area
Lea County, New Mexico

Dear Mr. Porter:

We enclose in triplicate original and two copies of the application of Union Producing Company for approval of the Northeast Lynch Unit Agreement embracing lands in Lea County, New Mexico, together with three copies of the proposed Unit Agreement.

You will recall that I talked to you and to Dan S. Nutter in regard to the unit, and Mr. Nutter stated that he would include the application in the Examiner's Hearing to be held on October 24th.

Please let us have a copy of the Notice published in connection with the hearing.

Yours very truly,

HERVEY, DOW & HINKLE

By *Clarence E. Hinkle*

CEH:ev

cc: Mr. J. H. Stroud
Land and Lease Department
Union Producing Company
P.O. Box 1407
Shreveport, Louisiana

cc: Mr. L. K. Booth
Union Producing Company
PO Box 4306
Midland, Texas

DOCKET MAILED

Date 10-11-62

2677

April 20, 1964

Jake L. Hamon
Vaughn Building
Dallas 1, Texas

Re: Northeast Lynch Unit
Lea County, New Mexico
Termination

Attention: Mr. W. T. LaGrone

Gentlemen:

The Commissioner of Public Lands approved as of April 17, 1964, the termination of the Northeast Lynch Unit, Lea County, New Mexico.

Although your letter of April 14, 1964, requested termination effective April 15, 1964, we are terminating effective as of May 1, 1964, this date being arrived at by Mr. Carl Traywick, United States Geological Survey as being acceptable to the survey.

May 1, 1964, termination also being agreed to by you during telephone conversation on April 17th.

Jake L. Hamon
April 20, 1964
- page 2 -

We are mailing four approved copies of this termination to the United States Geological Survey, Roswell, New Mexico, Attention Mr. John A. Anderson.

Very truly yours,

E. S. JOHNNY WALKER
COMMISSIONER OF PUBLIC LANDS

BY:
(MRS.) Marian M. Rhea, Supervisor
Unit Division

ESW/mm/v

cc: United States Geological Survey
P. O. Drawer 1857
Roswell, New Mexico
Attention: Mr. John A. Anderson
Encls. 4
Oil Conservation Commission
Santa Fe, New Mexico

3075

RECEIVED
APR 22 1964

April 17, 1964

Pan American Petroleum Corporation
P. O. Box 268
Lubbock, Texas

Re: Long Draw Unit
Eddy County, New Mexico

Attention: Mr. John H. Thompson

Gentlemen:

The Commissioner of Public Lands approved the Long Draw Unit, Eddy County, New Mexico as of April 16, 1964, subject to like approval by the United States Geological Survey.

We are handing to your Mr. Charles E. Koch six originally signed Certificates together with Official Receipt No. G-40263 in the amount of Thirty Five (\$35.00).

Please furnish us a fully conformed copy of this Unit Agreement when approved by the United States Geological Survey.

Very truly yours,

E. S. JOHNNY WALKER
COMMISSIONER OF PUBLIC LANDS

BY:
(Mrs.) Marian M. Rhea, Supervisor
Unit Division

ESW/nmr/v

cc: United States Geological Survey
Roswell, New Mexico

Oil Conservation Commission
Santa Fe, New Mexico

J. M. HERVEY 1874-1953
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HAROLD L. HENSLEY, JR.

LAW OFFICES
HERVEY, DOW & HINKLE
HINKLE BUILDING
ROSWELL, NEW MEXICO

2677
TELEPHONE 622-6510
AREA CODE 505
POST OFFICE BOX 10

December 18, 1962

A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Unit Agreement - Northeast Lynch Unit Area
Lea County, New Mexico

Dear Mr. Porter:

We enclose herewith a fully executed and approved copy of the above Unit Agreement. You will note that the Unit Agreement was approved by the Acting Director of the United States Geological Survey on December 13, 1962 and under Section 20 of the Agreement it is effective as of that date. Attached to the Agreement are executed copies of all of the consents and ratifications executed by the various parties.

The enclosed copy is filed with you in compliance with Order of the Commission entered on October 31, 1962 approving the Unit Agreement.

Yours very truly,

HERVEY, DOW & HINKLE

By 

CEH:ev
Encl.

cc: Mr. J. H. Stroud
Union Producing Company
P.O. Box 1407
Shreveport, Louisiana
Mr. Loyd K. Booth
Union Producing Company
P.O. Box 4306
Midland, Texas
Mr. Taylor LaGrone
c/o Jake L. Hamon, Dallas, Tex.