# SUBSURFACE STRATIGRAPHIC ANALYSIS OF THE PRUE SANDSTONE INTERVAL IN PORTIONS OF PAYNE AND LINCOLN COUNTIES, OKLAHOMA

By

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# CHAPTER 1

# INTRODUCTION

Stratigraphy is "the study of rocks and their distribution in space and time with the object of reconstructing the history of the earth and eventually of extraterrestrial bodies" (Prothero, 1996, p. 2). Many economic rocks and minerals, such as oil, gas, uranium, and coal are primarily in layered sedimentary rocks. A fundamental understanding of the principles of stratigraphy is critical to the practicing geologist. This document explores the application of stratigraphic principles and subsurface mapping techniques to specific rock units, in an effort to understand a portion of the history of Earth.

## Location

The study area for this project is part of the Central Oklahoma Platform, in southeastern Payne County and north central Lincoln County, Oklahoma (Figures 1 and 2). The area consists of nine townships: Township 16 North, Ranges 4, 5, and 6 East, Township 17 North, Ranges 4, 5, and 6 East, and Township 18 North, Ranges 4, 5, and 6 East. The Central Oklahoma Platform is a mature petroleum-exploration province; hence accessible geologic data are abundant. The study area was chosen because of this abundance of data and because of the author's interest in stratigraphy of Desmoinesian rocks of the region.

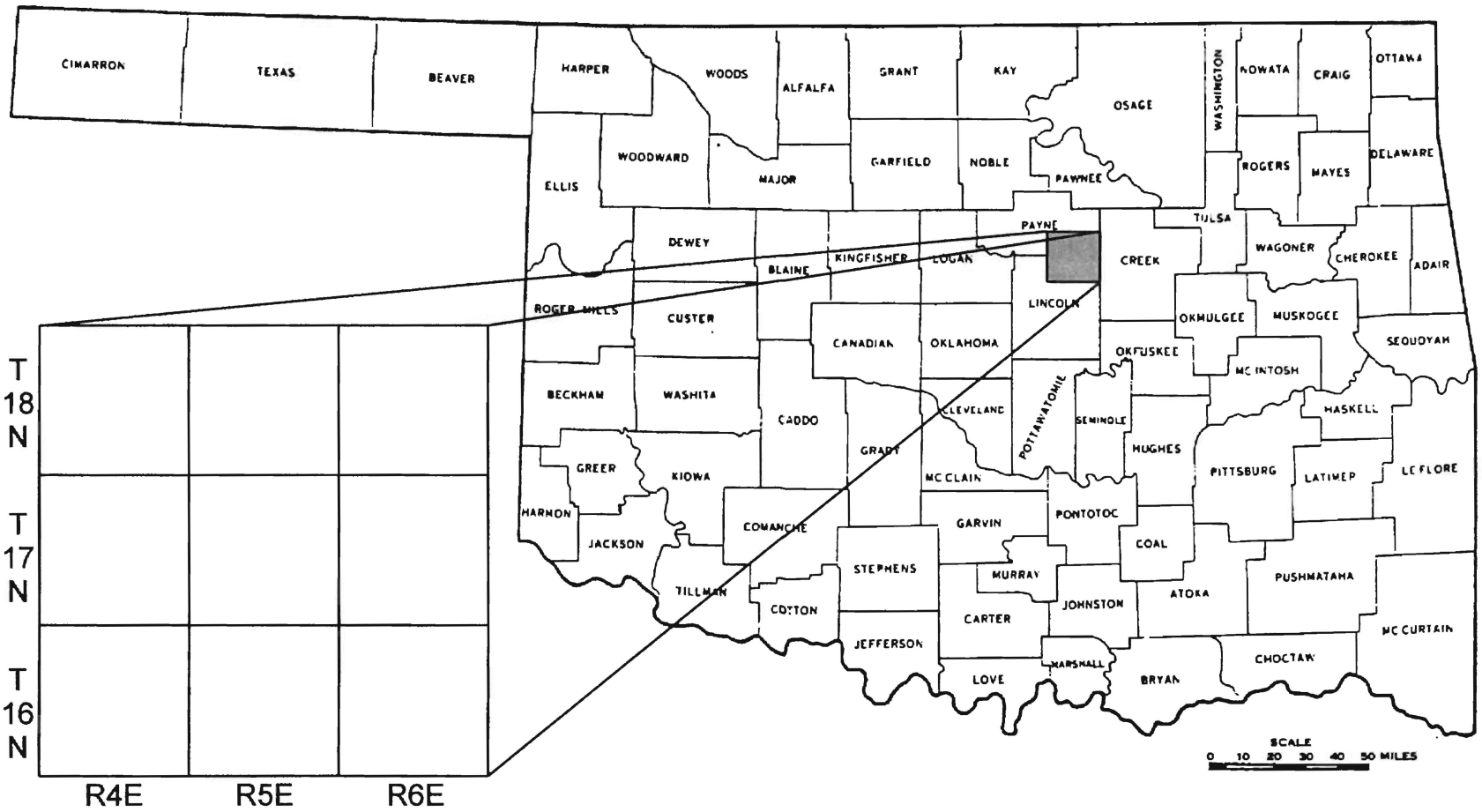


Figure 1. Location map of study area.

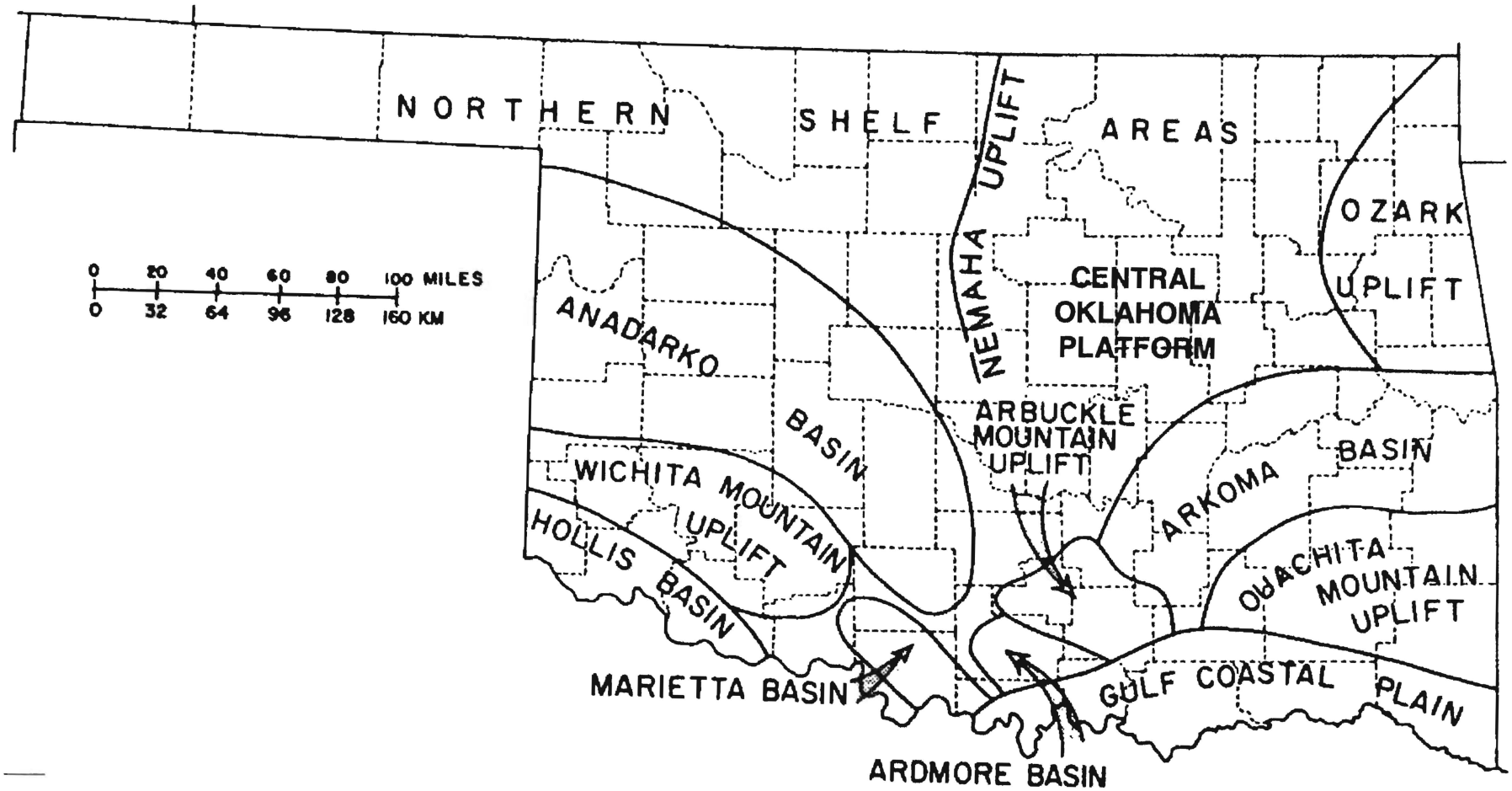


Figure 2. Major geologic provinces of Oklahoma (after Johnson, 1971).

## Purpose of Study

This research is as much a test of subsurface geologic methods (as they apply specifically to this study area and stratigraphic interval) as it is a direct investigation of the Prue Sandstone Interval (Figure 3). Several questions developed during the course of the investigation: Can the Verdigris Limestone be successfully and confidently correlated using well logs? Is it possible to deduce the depositional environment of a sandstone unit based solely on well-log interpretation? Can incised valley fills be distinguished from strata deposited in distributary channels in a study of this areal extent conducted with data recorded from well logs only? Can maps be constructed efficiently using computer drafting (not *mapping*) software?

From these and other questions, the following six objectives were derived:

1. To map the distribution of sandstone deposits within the Prue Sandstone Interval
2. To investigate the structural attitude of one or more marker beds within the defined Prue Interval.
3. To approximate the paleotopography of the surface on which Prue sandstone was deposited.
4. To map the areal distribution of the Verdigris Limestone.
5. To investigate evidence of the depositional environments of the Prue Sandstone Interval, and within the limitations of this evidence, to deduce the depositional environments of Prue Sandstone.
6. To investigate advantages and disadvantages of constructing maps and cross sections using the Canvas Version 3.5 computer-drawing program.

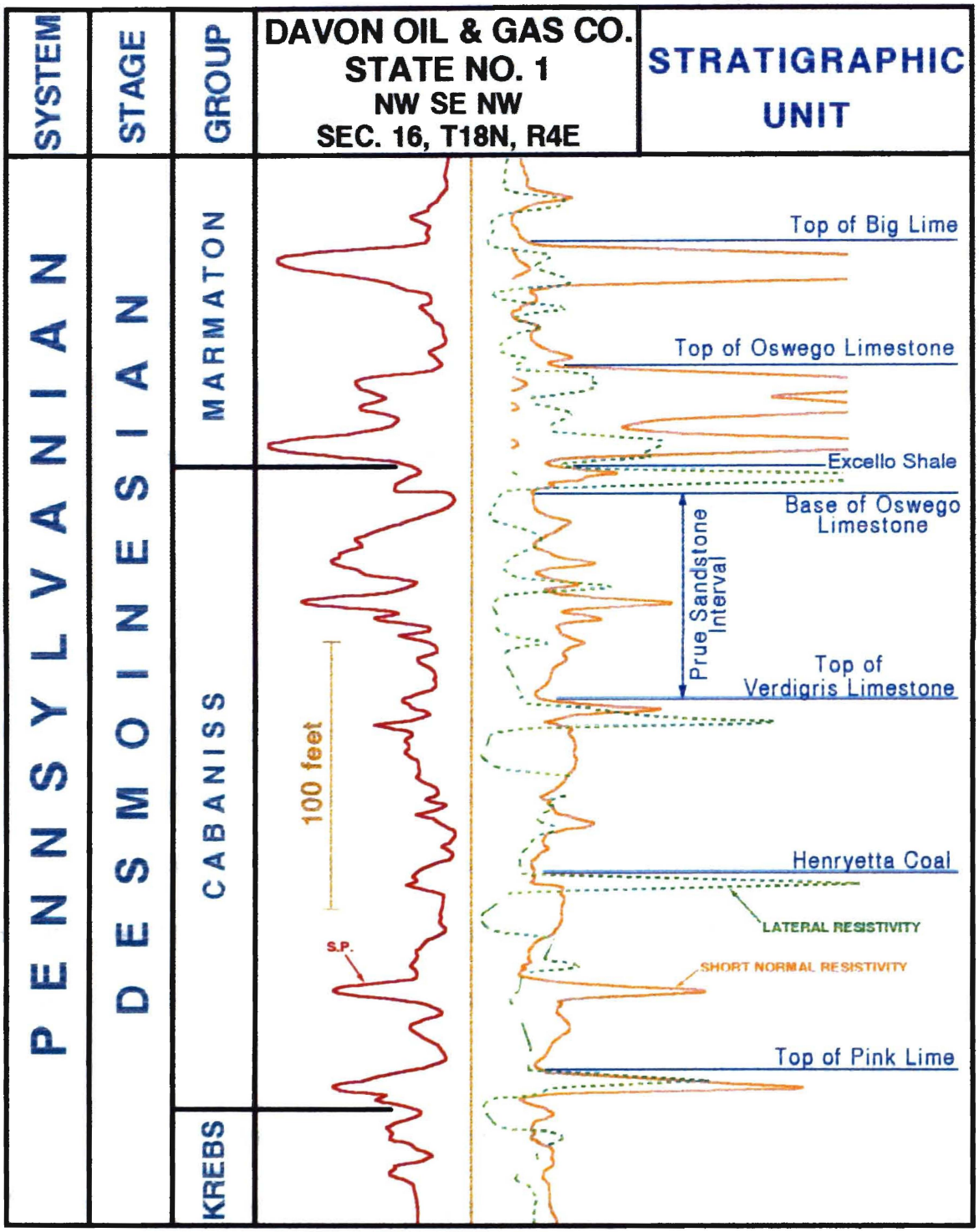


Figure 3. Type electric log of study area. Rock-stratigraphic terms include formal stratigraphic names (e.g. Verdigris Limestone, Excello Shale) and informal stratigraphic names (Pink Lime, Henryetta Coal, Prue Sandstone Interval, Oswego Limestone, Big Lime).

## Methods of Investigation

Techniques employed to accomplish the above objectives involved electric-log correlation, construction of various subsurface-geologic maps and cross sections, and interpretation of these maps and cross sections. These techniques were modeled after several previous works. Asquith (1982) summarized well-logging techniques and the uses of well logs in geologic investigations in *Basic Well Log Analysis for Geologists.* In their 1984 book *Applied Subsurface Geologic Mapping,* Tearpock and Bischke thoroughly described the uses and construction of isopach maps, net-sandstone isolith maps, structural contour maps, and stratigraphic cross-sections. In 1997, Cleaves explained these techniques further. Andresen (1962) described techniques for interpreting paleodrainage patterns. One of his techniques involved a map of the distribution of a prominent lithologic marker that was removed locally by "valley-cutting". The idea of the Verdigris Limestone Coded Log Signature Map evolved from this work. Potter (1967) described sandstone geometries as they relate to depositional environments in his review of sand bodies and sedimentary environments. In his textbook *Interpreting the Stratigraphic Record*, Prothero (1990) described characteristics of fluvial depositional systems. Van Wagoner, Mitchum, Campion, and Rahmanian (1990) established criteria for delineating parasequences and sequences. Emery and Myers (1996) described differences between distributary channels and incised-valley fills. Ropp (1991) identified "cycles" in the Marmaton and Cabaniss Groups. Roark (1992)

described a method for delineating rock of reservoir quality based solely on well-log signatures.

Sources of data for construction of maps and cross sections were electric logs, induction logs, gamma ray logs, porosity logs, and caliper logs. More than six hundred well logs were analyzed between May and November, 1997.

Data extracted from the well logs were recorded in a Microsoft Excel Version 5.0 spreadsheet (Appendix A). Use of the spreadsheet eliminated manual calculations. The name, location, and total depth of each well were entered for reference. The datum elevation was entered, followed by elevations of tops and/or bottoms of selected rock-stratigraphic units, as read directly from the well log. The spreadsheet was designed so that the depths-below-sea-level of formations and the interval-isopach thicknesses were calculated automatically by subtraction of the datum elevation from the appropriate log-depths. The net-sandstone thickness and the maximal thickness of sandstone within the Prue interval were entered, as measured directly from the well logs.

Base maps were constructed using Canvas Windows Version 3.5 drawing program. Contour lines were drawn manually on the base maps. The contoured maps were cut into 8.5" x 13" pieces which were scanned and stored as digital images. The contour lines were digitized using Canvas. The final copies of the maps were printed on a Hewlett Packard Design Jet 755C color plotter.

## Previous Investigations

Several previous investigations on Desmoinesian rocks in Oklahoma have been conducted. Oakes (1953) was first to divide the informal "Cherokee Group" into the Krebs and Cabaniss Groups. Akmal (1953) reported on the subsurface geology of northeastern Lincoln and southeastern Payne Counties, Oklahoma. McElroy (1961) investigated the Desmoinesian Series in portions of ten counties in north-central Oklahoma. In separate studies, Cole and Berg researched the "Cherokee Group" in north-central Oklahoma. Cole (1969) investigated the "Cherokee Group" on the eastern flank of the Nemaha Ridge whereas Berg (1969) reported on the "Cherokee Group" on the western flank. Shipley (1977) reported on local depositional trends of "Cherokee" sandstones. Ropp (1991) conducted a facies, diagenetic, and structural geologic evaluation of the Prue Sandstone in northern Lincoln County, Oklahoma.

# CHAPTER 2

# STRATIGRAPHY

## General Statement

This study is concerned with rocks of the Desmoinesian Stage of the Pennsylvanian System. It involves rocks of the Cabaniss Group and the Marmaton Group (Figure 4). The older of these groups, the Cabaniss Group, is conformable on rocks of the Krebs Group. Directly overlying the Cabaniss Group is the Marmaton Group. The Krebs and Cabaniss Groups collectively are commonly referred to as the "Cherokee Group." Although the name "Cherokee Group" is used extensively, the group is an informal rock-stratigraphic unit. The Krebs and Cabaniss Groups comprise sequences of sedimentary rock that were deposited during a major transgression of the Cherokee Sea (Roark, 1992). Regressions interrupted the overall transgression of the sea, resulting in deposition of four rock-stratigraphic sequences that contain extensive sandstone. From oldest to youngest they are the informally named Bartlesville, Red Fork, Skinner, and Prue sandstones. This paper is the record of a subsurface investigation of the youngest of these intervals, referred to herein as the Prue Sandstone Interval.

The following stratigraphic units were studied: the Pink Limestone, the Verdigris Limestone, the Prue Sandstone Interval, the Breezy Hill Limestone, the Excello Shale, the Oswego Limestone, and the Big Lime.

| SYSTEM | STAGE | GROUP | | FORMAL NAME (FORMATIONS) | FORMAL NAME (MEMBERS OR MARKER BEDS) | SUBSURFACE NAME |
|---|---|---|---|---|---|---|
| PENNSYLVANIAN | DESMOINESIAN | MARMATON GROUP | | OOLOGAH LS | OOLOGAH LS | BIG LIME |
| | | | | LABETTE SH | | |
| | | | | FORT SCOTT LS | FORT SCOTT LS | OSWEGO LS |
| | | "CHEROKEE GROUP" | CABANISS GROUP | SENORA FORMATION | EXCELLO SH | |
| | | | | | BREEZY HILL LS | |
| | | | | | LAGONDA SS | PRUE SAND |
| | | | | | VERDIGRIS LS | VERDIGRIS LS |
| | | | | | | UPPER SKINNER SS |
| | | | | | CROWEBURG COAL | HENRYETTA COAL |
| | | | | | CHELSEA SS | LOWER SKINNER SS |
| | | | | | TIAWAH LS | PINK LIMESTONE |
| | | | KREBS GROUP | BOGGY FORMATION | TAFT SS | RED FORK SS |

Figure 4. Generalized stratigraphic nomenclature of Cabaniss and Marmaton Groups (after Lojek, 1983). "Cherokee Group" is an informal rock-stratigraphic unit.
Abbreviations: LS=limestone, SH=shale, SS=sandstone



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## Cabaniss Group

### Pink Limestone

The Pink Limestone is the oldest stratigraphic unit dealt with closely in this study. It is an informal rock-stratigraphic unit, the subsurface equivalent of the Tiawah Limestone (Figure 4). The Pink Limestone was described first by Fohs and Gardner in 1914 (Jordan, 1957). This unit is useful as a marker bed because of its characteristic log signature (Figure 3) and its lateral persistence: it is identifiable on each of the 567 well logs. The Pink Limestone is fossiliferous (Hanke, 1967), gray to brown, finely crystalline limestone (Graves, 1955). It contains crystals of pink calcite, for which it was named (Jordan, 1957). The contact between the Krebs Group and the Cabaniss Group is at the base of the Pink Limestone (Figure 3).

### Verdigris Limestone

The lowermost extensive carbonate-rock marker bed within the Cabaniss Group is the Verdigris Limestone (Figure 4). In 1914, Smith named this unit from its outcrop along the Verdigris River near Claremore, Oklahoma (Hanke, 1967). The Verdigris is referred to by some geologists as the Little Oswego Limestone (Jordan, 1957). "The Verdigris Limestone is a gray, buff to brown, compact, very fine to finely crystalline, argillaceous, fossiliferous limestone." (McElroy, 1961). This marker bed is indicated on the large majority of the well logs studied (Figure 3).

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Prue Sandstone Interval

The Prue Sandstone Interval is defined here as the stratigraphic interval between the top of the Verdigris Limestone and the base of the Breezy Hill Limestone (Figure 3). In 1921, White and Green gave the name "Prue Sand" to sandstone in the Prue oilfield of Osage County, Oklahoma. The name "Prue Sand" refers to any one of several rock-stratigraphic units of sandstone within the Prue Sandstone Interval. These subsurface strata have been referred to as the Squirrel, Perryman, and Bixler sands. Their stratigraphic equivalent at the surface is the Lagonda Sandstone, a formal rock-stratigraphic unit (Jordan, 1957). These lenticular bodies of sandstone within the Prue Interval are gray to brown, fine- to very fine-grained, subangular, micaceous, and argillaceous (Clayton, 1965).

Breezy Hill Limestone Member, Senora Formation

The Prue Sandstone Interval grades upward into the Breezy Hill Limestone Member (Figure 3). "The Breezy Hill Limestone is a skeletal calcilutite to calcarenite from eastern Crawford County, Kansas, southwestward into Oklahoma where it attains 3m in thickness and lies below the Excello black shale." (Brenner, 1995).

Excello Shale Member, Senora Formation

The Excello Shale is the uppermost member of the Senora Formation. The Excello, a formal rock-stratigraphic unit, directly overlies the Breezy Hill Limestone (Figure 4). The Excello was indicated on every well log studied. This unit displays a

"hot" signature on gamma ray logs, and a "dirty" or "shaly" signature on SP and resistivity logs (Figure 3). The Excello "...is composed of a black, fissile, thinly-laminated shale, which contains phosphate nodules. These very abundant nodules, which are one of the most diagnostic features of the Excello, also contain pyrite, quartz, calcite, organic carbon, and minor amounts of clay minerals." (Ece, 1989). "The conformable boundary between the Marmaton and Cabaniss Groups is recognized as the top of the Excello Shale." (Puckette, 1990) (Figure 3).

Marmaton Group

Oswego Limestone

The Oswego Limestone was named in 1894 by Hayworth and Kirk on the basis of an exposure of rocks near Oswego, Kansas (Jordan, 1957). These strata were renamed "Fort Scott Limestone" (Hanke, 1967). The Oswego Limestone is the informal subsurface equivalent of the Fort Scott Limestone (Clayton, 1965) (Figure 4). The Oswego Limestone was identifiable on every well log investigated in this research. This marker formation is white to tan, "...dense, finely crystalline, cherty limestone, characterized by local oolites, calcite veins, and dolomitic and arenacous lentils." (McElroy, 1961). Limestone units within the Owsego are interbedded with dark gray to black shale (McElroy, 1961).

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Big Lime

The Big Lime, an informal rock-stratigraphic unit, is the subsurface equivalent of the Oologah Limestone (Figure 4). The Oologah Limestone was named by Drake in 1898 for the town of Oologah, Tulsa County, Oklahoma (Jordan, 1957). The Big Lime comprises two limestone units separated by shale. Their probable surface equivalents are the Altamont Limestone Member, the Bandera Shale Member, and the Pawnee Limestone Member (Graves, 1955). The Big Lime is white, gray to buff, fine to coarsely crystalline, oolitic, and dolomitic (McElroy, 1961).

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# CHAPTER 3

# INTERPRETATION OF WELL LOGS, MAPS AND CROSS SECTIONS

According to Shelton (1996, p.3), "In fact, the only unequivocal criteria for depositional environment are those features that are indigenous (e.g., paleosoils, certain fossils)." The presence or absence of these types of features is not indicated on well logs. However, well logs may be used to delineate the geometry of rock units, and to give some indication of lithology. Of course, well-log data can be used to construct maps and cross sections. Evidence gathered from these documents can be used for preliminary interpretation of the depositional environment of a rock unit.

This chapter explains the major lines of evidence for preliminary interpretation of the depositional environment of the Prue Sandstone Interval as observed in well logs, maps, and cross sections.

## Interpretation Of Well Logs

For the purposes of this study, "reservoir sandstone" is defined as rocks that are indicated by negative deflection ≥ 45 millivolts on Spontaneous Potential logs (see Appendix A for discussion of definition of reservoir sandstone).

Sandstone units within the Prue Sandstone Interval display characteristic SP log signatures (Figure 5). Some SP logs showed a pronounced negative deflection at the base of the interval interpreted as sandstone (Figure 5, left).

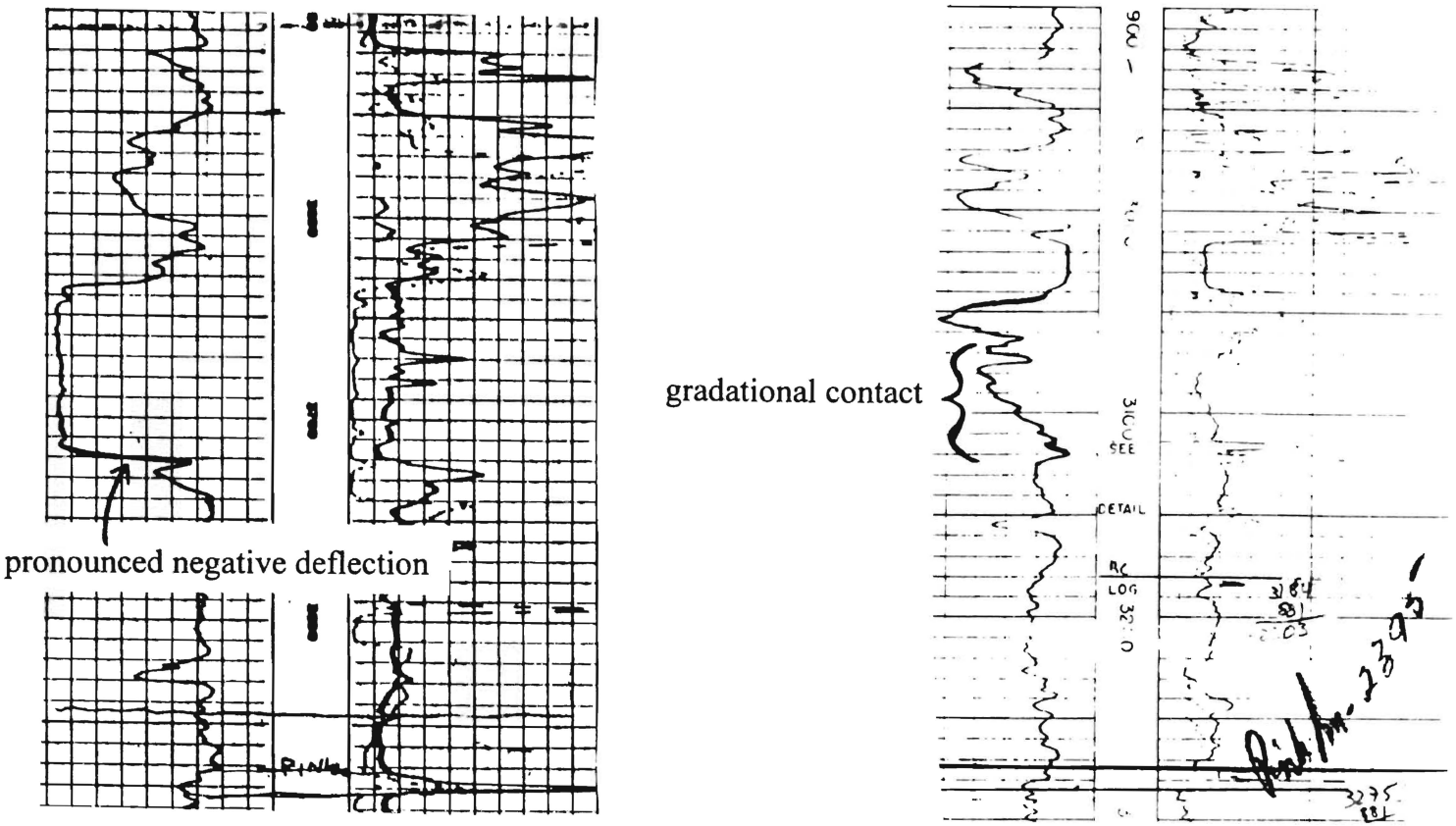


Figure 5. SP log signatures of the Prue Sandstone Interval.

Negative deflection of the SP curve is evidence of a significantly greater porosity and permeability in rocks above the deflection, in comparison with rocks below the deflection. Such an abrupt change in lithologic character could be observed at an erosional unconformity where coarse-grained rock is juxtaposed on finer grained rock (e.g. coarse-grained sandstone overlying shale). Pronounced negative deflections of the SP curve near the lower boundaries of sandstone bodies within the Prue Interval are considered evidence of erosional unconformities at the bases of these rock units.

Some logs do not show a pronounced negative deflection of the SP curve. Instead, the SP log signature was "serrate" near the base of sandstone units (Figure 5, right). A log signature of this type is evidence of permeable rocks interbedded with non-permeable rocks. This coarsening-upward log signature could be observed at gradational contact of mudrock (or shale) below and sandstone above. This type of SP log signature is considered evidence of such a gradational contact.

## Interpretation of Geologic Maps

### Structural Contour Map of the Top of the Verdigris Limestone

The top of the Verdigris Limestone (Figure 3) was the datum for a structural contour map. The map (Plate A) shows that the strike of the Verdigris is north-northeast. Dip is to the west-northwest at an average of 70 feet per mile (0.6°), as measured along the boundary between Payne and Lincoln Counties.

Many anticlinal structures are indicated on the map. Contour lines indicate closed anticlines at the surface of the Verdigris. They are at the following locations:

Sections 31 and 32, T18N, R4E and Sections 4, 5, and 6, T17N, R4E.

Sections 15, 16, 21, and 22, T18N, R4E.

Sections 5, 6, 7, and 8, T18N, R5E.

Sections 33 and 34, T18N, R5E.

The map indicates several anticlinal noses at the surface of the Verdigris Limestone. Bates and Jackson (1984, p. 350) define "nose" as "A short, plunging anticline without closure." An east-trending nose is indicated on the map: It extends from the eastern boundary of the study area through Sections 25, 26, 27, and 28, T17N, R6E.

Structural Contour Map of the Top of the Oswego Limestone

The top of the Oswego Limestone (Figure 3) was the datum for a second structural contour map. The map (Plate B) shows that the strike of the Oswego is north-northeast. Dip is to the west-northwest at an average of 69 feet per mile (0.6°), as measured along the boundary between Payne and Lincoln Counties.

Many anticlinal structures are indicated on the map. Contour lines indicate closed anticlines at the surface of the Oswego Limestone. They are at the following locations:

Sections 31, 32, and 33, T18N, R4E and Sections 4, 5, and 6, T17N, R4E.

Sections 16 and 21, T18N, R4E.

Sections 5, 6, 7, and 8, T18N, R5E.

Sections 16 and 21, T18N, R5E.

Sections 23, 24, 25, and 26, T18N, R5E.

Anticlinal noses also are suggested by the map. The map indicates an east-trending nose extending from the eastern boundary of the study area through Sections 25, 26, 27, and 28, T17N, R6E. Another prominent nose is in Sections 33 and 34, T18N, R5E.

Evidence Of Tectonic Forces That Affected the Prue Sandstone Interval

In adherence to Steno's Law of Original Horizontality, the Verdigris Limestone and the Oswego Limestone are assumed to have been deposited flat or nearly flat. Structural contour maps of the tops of these two units indicate several common structural elements. Both formations strike north-northeastward. The dips of the formations are west-northwestward. The angles-of-dip of these two units differ by less than one percent. This is evidence which supports the following hypothesis: A large majority of the structural attitude of the Verdigris Limestone and the Oswego Limestone is the result of tectonic forces that affected both units. These forces began after deposition of sediments that lithified to form the Oswego Limestone. Based on Steno's Law of Superposition, these same tectonic forces would have affected all strata between the Verdigris and the Oswego, including the Prue Sandstone Interval. Therefore, the large majority of the present structural attitude of the Prue Sandstone Interval is the result of tectonic forces that began after deposition of sediments that lithified to form the Oswego Limestone.

Prue Sandstone Interval Isopach Map

Plate C is an isopach map of the Prue Sandstone Interval (the interval from the base of the Oswego Limestone to the top of the Verdigris Limestone). Some well logs indicate that the Verdigris Limestone is absent entirely. On every log of this type, sections of sandstone were indicated in the Prue Sandstone Interval. In this case, bases of these sections of sandstone were interpreted as the base of the Prue Sandstone Interval.

Plate C indicates that the maximal thickness of the Prue Sandstone Interval is 160 feet, in Section 3, T18N, R5E, minimal thickness is 31 feet in Section 8, T16N, R4E. The Prue Interval is thickest in the eastern portion of the study area and it thins generally to the west.

If the upper surface of an isopach-mapped interval is flattened and set horizontal, the lower surface represents a "cast" of the surface upon which the rocks of the mapped interval were deposited. In this manner, Plate C approximates the paleotopography of the surface on which the Prue Sandstone Interval was deposited.

The paleotopography on which the Prue Sandstone Interval was deposited was characterized by numerous valleys. The deepest valleys indicated by the isopach map are coincident with the maximum thicknesses of sandstone indicated on the Prue Sandstone Interval, Net-Sandstone Isolith Map (Plate C).

Prue Sandstone Interval, Net-Sandstone Isolith Map

Plate D is a net-sandstone isolith map of the Prue Sandstone Interval. This map shows evidence of several sandstone bodies. They range from 0.5 miles to 5 miles in width, and 0.5 miles to ≥ 18 miles in length. Three basic geometries of sandstone bodies are represented: sheets, elongated belts, and pods (Figure 6).

Sandstone with a sheet-geometry is centered in T18N, R5E. Van Wagoner, Mitchum, Campion, and Rahmanian (1990) reported that this type of sheet deposit "probably forms when several river systems coalesce during sea-level lowstand." This is considered evidence for interpreting sandstone within the Prue Interval as channel deposits.

Elongated belts of sandstone are also shown on the map. These belts are 1 to 6 miles wide. One of these belts extends westward, and thence southward from the sheet deposit in T18N, R5E. A second elongated belt extends from the eastern boundary of the study area to an area 0.5 miles west of Cushing (Plate D), where it is joined with the belt described above. A northeast-trending belt of sandstone is in the north-central portion of T18N, R4E. These elongate belts typically are "beaded". The term "beaded" refers to curves in contour lines on net sandstone isolith maps. These "beads" suggest localities where sand was deposited in meandering channels within the elongated belt. Beaded elongated belts are characteristic of high-sinuosity channel systems (Emery and Myers, 1996). This is considered convergent evidence for the interpretation of sandstone units within the Prue Interval as channel-complex deposits.

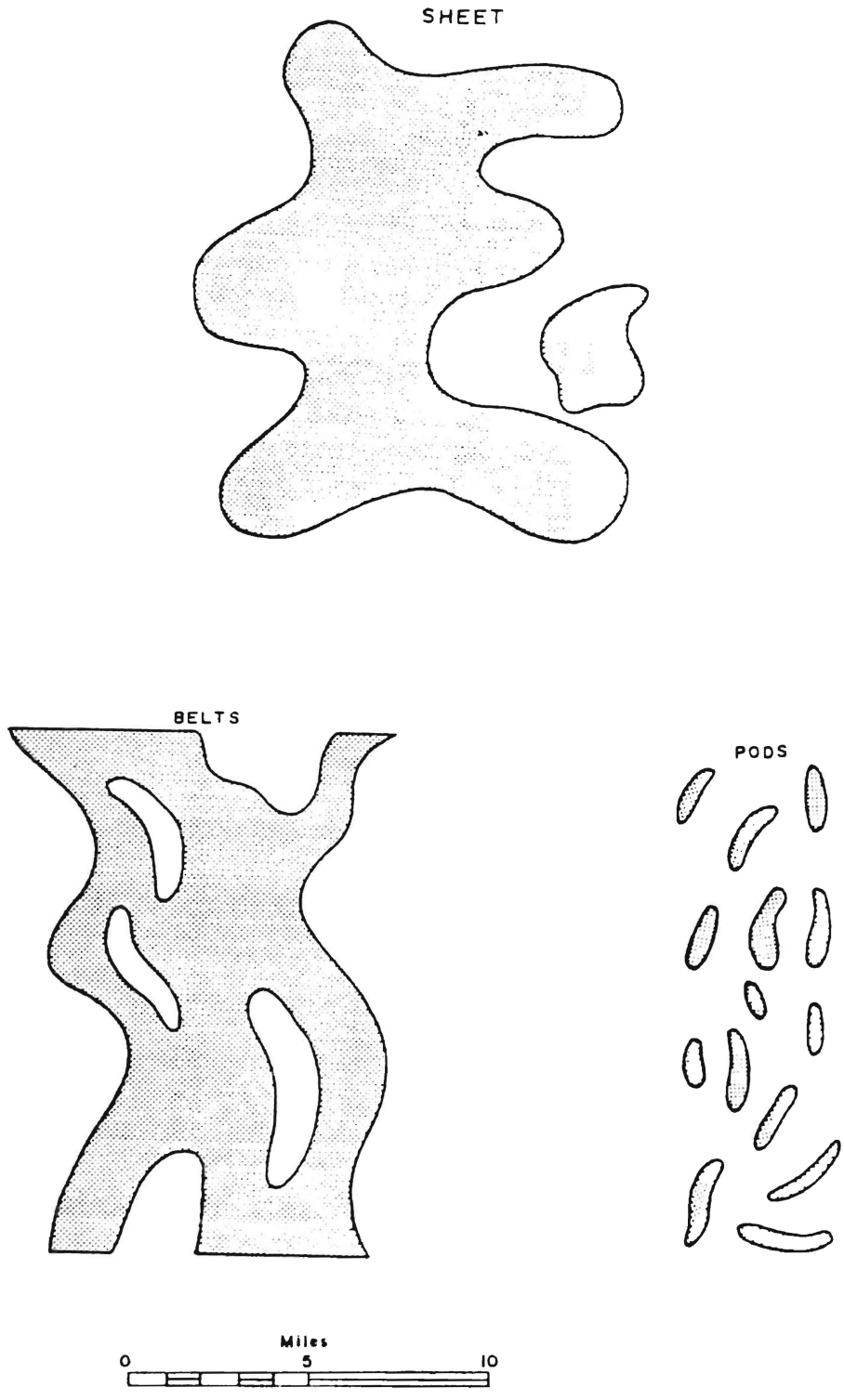


Figure 6. Geometry of sandstone in the Prue Sandstone Interval (after Cole, 1969)

Verdigris Limestone Log-Signature Map

At least three different log signatures of the Verdigris Limestone were observed (Figure 7). The signatures were coded: The code "0" was assigned to those log signatures that resemble a "normal" log signature of the Verdigris Limestone -- that is, the Verdigris is not anomalously thin. The boundary between the Verdigris and immediately overlying rocks is interpreted as being conformable, in as much as no evidence to the contrary was observed.

On other logs, the log signature indicates that the Verdigris is improbably thin. These logs indicate that the upper part of the Verdigris may be absent and that the boundary between the Verdigris and immediately overlying rocks may be disconformable. Log signatures of this type were assigned the code "1".

Other logs indicate that the Verdigris Limestone is absent entirely. These logs all indicate a sandstone body in the stratigraphic position of the Verdigris. Log signatures of this type were assigned the code "2".

Type 1 and Type 2 log signatures are interpreted as evidence that the Verdigris was eroded. Type 2 log signatures are interpreted as evidence that erosion removed the Verdigris and penetrated part of the underlying strata.

A coded log-signature map of the Verdigris Limestone is shown as Plate E. The assumption was made that for an area of no erosion (Type 0 logs) to be bounded directly by an area of complete erosion (Type 2 logs) is improbable; an area of partial erosion (Type 1 logs) was mapped accordingly (Plate E).

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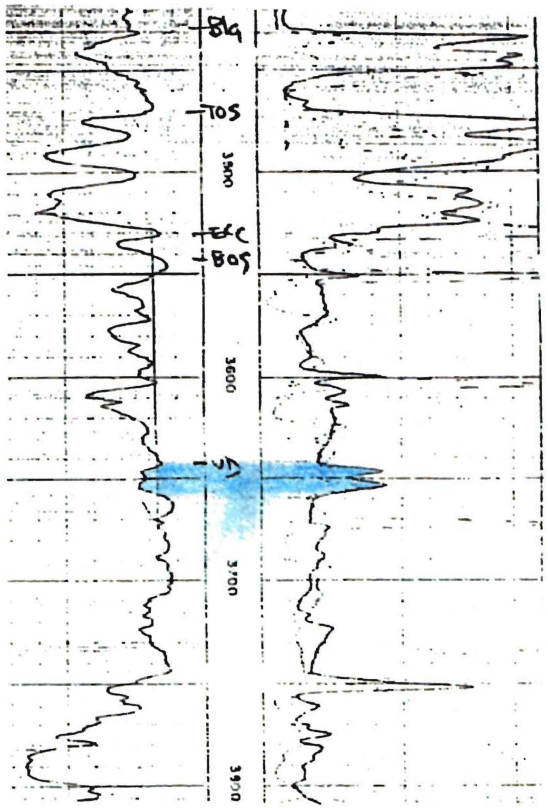
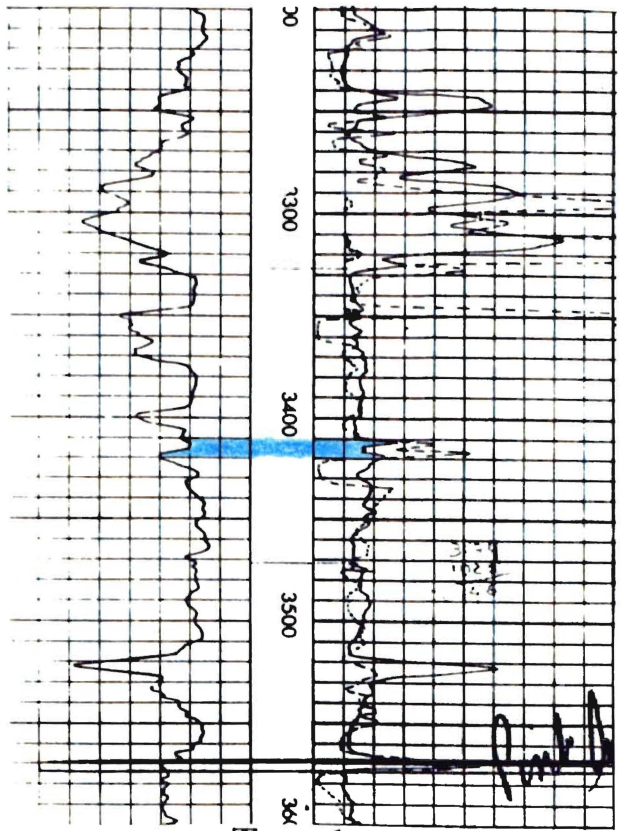
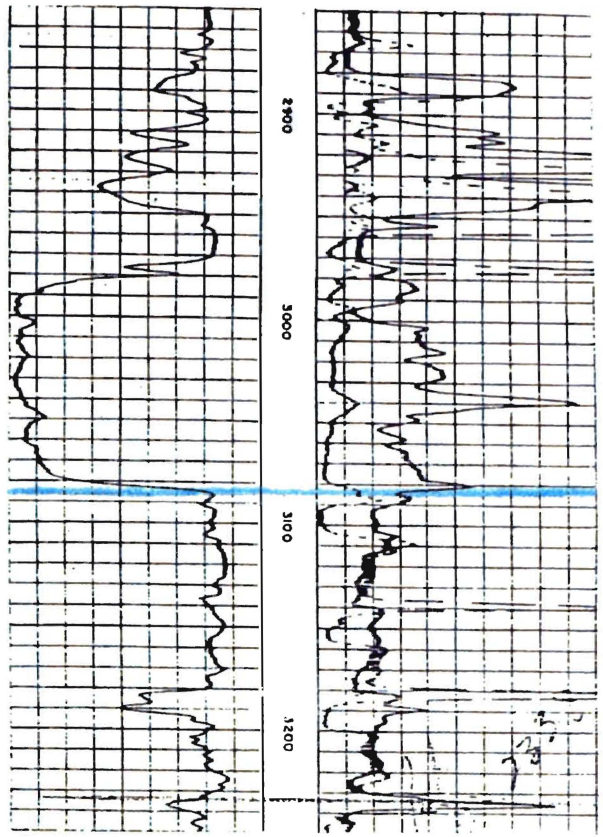


**Type 0**
"normal" log response.
Thickness of
Verdigris Limestone=20 feet



**Type 1**
Verdigris Limestone is present,
but significantly thinner.
Thickness=10 feet



**Type 2**
Verdigris Limestone is absent entirely.
Blue line indicates lower boundary
of sandstone body within the Prue
Sandstone Interval.

Figure 7. Log signatures of the Verdigris Limestone. Blue shading indicates intervals interpreted as Verdigris Limestone.



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Areas of normal (type 0) log signatures extend from the boundaries toward the center of the study area. Four smaller areas of Type 0 logs are in the following locations:

Sections 25 and 26, T16N, R4E.

Section 12, T16N, R4E.

Sections 27, 28, and 29, T17N, R6E.

Sections 9 and 10, T17N, R5E.

Type 1 log signatures are indicated in most of the study area. In four areas well logs indicate that the Verdigris is absent. These four areas are shown on Plate E as groups of Type 2 log signatures.

Every log that displays a Type 2 signature of the Verdigris Limestone also indicates sections of net sandstone in the overlying Prue Sandstone Interval. These sections of sandstone range in thickness from 14 to 105 feet.

## Interpretation of Cross Sections

Six cross sections were constructed. Three north-south stratigraphic cross sections, titled A-A', B-B', and C-C', are shown as Plate F. Three east-west stratigraphic cross sections are shown as Plate G. Figure 8 shows their locations. The datum for these cross sections was the Excello Shale. Solid lines indicate conformable contacts. Wavy lines indicate unconformable contacts, as suggested by the well logs.

The top of the Pink Lime (shown as a solid pink line) is generally parallel to the base of the Verdigris Limestone on all six cross sections. Uniform thickness of the Verdigris consistently is in the range of 10-15 feet in wells where Type 0 log signatures

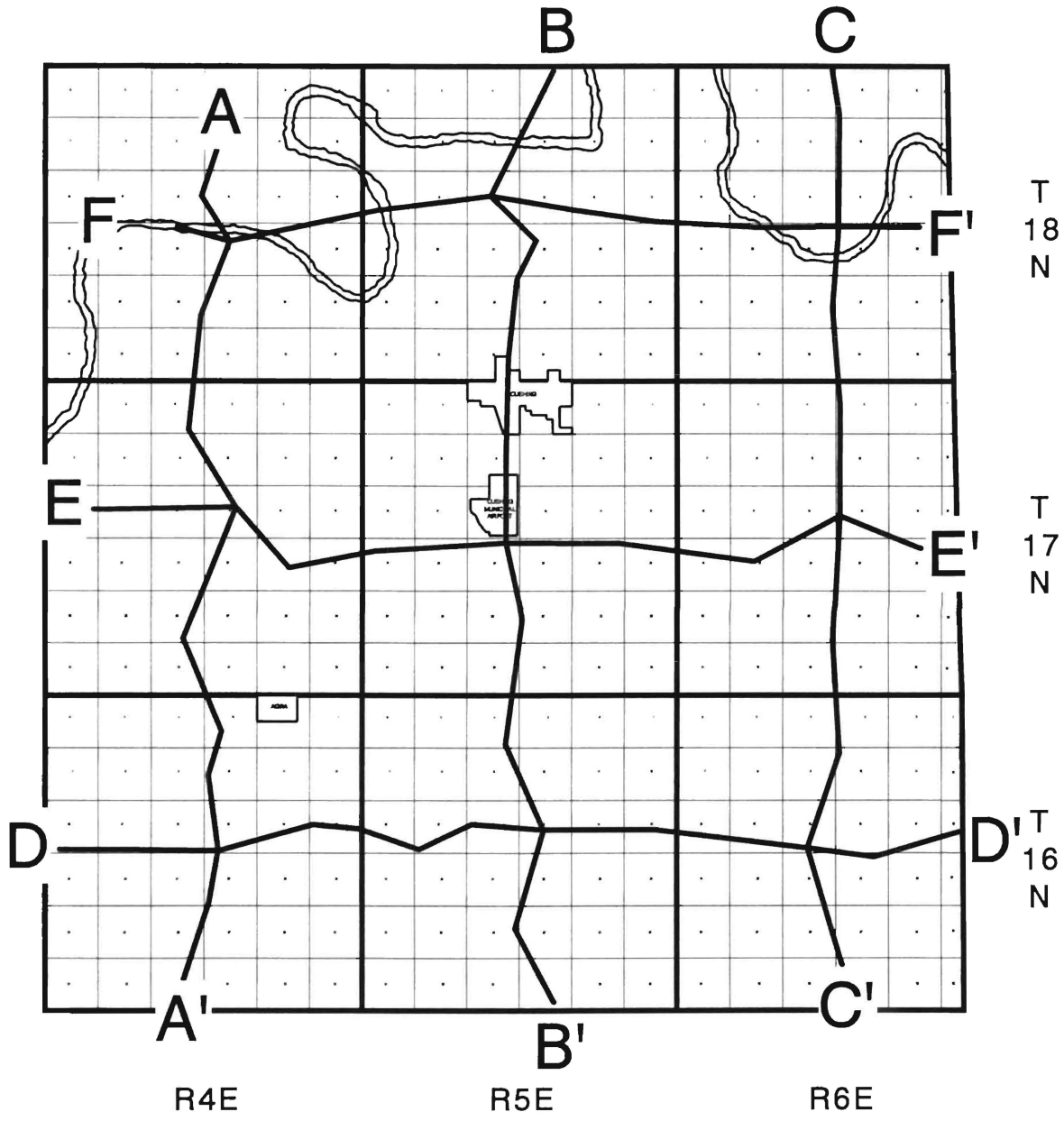



Figure 8. Index map showing locations of cross sections.

are recorded. The Verdigris is thinner in wells where a Type 1 log signature is recorded, and it is absent in wells coded as "Type 2."

The Oswego Limestone shows nearly uniform thickness on all six cross sections with two exceptions. On the B-B' cross section, in well B-1, the Oswego is thicker by approximately 10 feet. In well B-7, the Oswego is thinner by approximately 20 feet.

The Big Lime also shows nearly uniform thickness with the same two exceptions. In well B-1, the Big Lime is thicker by approximately 10 feet. In well B-7, the Big Lime is thinner by approximately 10 feet.

The Prue Sandstone Interval varies significantly in thickness and log character. Several units of sandstone are observable within the Prue Interval. Recall that for the purposes of this study, only the rocks where an SP deflection greater than -45 millivolts was recorded were considered as being reservoir-sandstone. Rocks meeting this criterion are represented on the cross sections by a light-brown stipple pattern bounded by solid light-brown lines. The well logs reproduced on the cross sections did not have identical horizontal scales. Therefore, it may appear that some sandstone units were inappropriately delineated on the cross sections. Distortion of the well logs during reproduction compounded this problem. The following paragraphs describe the Prue Sandstone Interval as it is shown on each cross section.

Interpretation Of North-South Stratigraphic Cross Sections

A-A'

The Prue Sandstone Interval displays variable thickness. In wells A-8, A-9, A-10, and A-11, sandstone is indicated by the SP log. This sandstone is shown on Plate F as part of a continuous sandstone unit within the Prue Interval. The SP log indicates an erosional contact with subjacent strata. The sandstone unit appears to have been deposited where the Verdigris Limestone was truncated. In each of these wells, the thickness of the Prue Sandstone Interval is greater than the thickness of the interval in wells where no sandstone is indicated.

A second sandstone unit within the Prue Interval is in wells A-2 and A-3. The SP logs indicate a sharp contact between this sandstone unit and subjacent strata. A slight increase in the thickness of the Prue Interval is indicated between wells A-2 and A-3 where this sandstone unit is inferred to have been deposited in a channel that truncated the top of the Verdigris Limestone.

B-B'

At least 20 feet of sandstone is within the Prue Interval in wells B-1, B-2, B-3, B-4, and B-5. These sandstone bodies are shown on Plate F as a continuous sandstone unit within the Prue Interval. The SP log indicates a sharp contact with subjacent strata. The base of this sandstone unit seems to be upon partly eroded Verdigris Limestone in wells B-1, B-2, and B-5. This sandstone unit seems to be in positions where Verdigris

Limestone was completely truncated, in wells B-3 and B-4. In wells B-1, B-2, B-3, B-4, and B-5, the Prue Sandstone Interval is thicker than in wells where no sandstone is immediately superjacent to the Verdigris Limestone.

A thinner, stratigraphically higher sandstone unit is in wells B-6 and B-7. This younger unit has a gradational basal contact. For this reason, it is shown as a separate rock unit.

C-C'

One sandstone unit is shown on the C-C' cross section. This unit is thin and laterally persistent, as compared to other sandstone units. This is due to the fact that the C-C' cross section line follows the strike of an elongate sandstone body, as indicated by the Net Sandstone Isolith Map (Plate D). This sandstone unit is in gradational contact with subjacent rocks.

Interpretation Of East-West Stratigraphic Cross Sections

D-D'

Three sandstone units within the Prue Interval are shown on the D-D' cross section. The SP logs of wells D-3 and D-4 indicate a sharp contact between the thick Prue Sandstone and subjacent rocks. The base of this sandstone is in the stratigraphic position of the Verdigris Limestone.

Sandstone also is shown in well D-6. A sharp contact between this sandstone unit and subjacent rocks is indicated by the SP log, this contact apparently is where the upper part of the Verdigris Limestone was eroded.

A third sandstone unit is shown in well D-12. This unit is stratigraphically higher than the other two sandstone units shown on this cross section. The sandstone is gradational at the basal contact, as made evident by the SP log. The base of sandstone is about 30 feet above the Verdigris Limestone.

E-E'

Two sandstone units within the Prue Interval are shown on the E-E' cross section. In well E-3 sandstone is in sharp basal contact with the Verdigris as is shown by the SP log. At contact the top part of the Verdigris Limestone apparently is truncated.

Younger sandstone is in two other wells: E-6 and E-7. The sandstone is in gradational contact with strata below and above.

F-F'

Two sandstone units are shown on cross section F-F'. In well F-1 sandstone overlies rocks older than the Verdigris, where the Verdigris almost certainly was removed by erosion.

The second sandstone unit is in wells F-4, F-5, and F-6. This sandstone unit has a sharp basal contact with strata beneath. In wells F-4 and F-5, the Verdigris Limestone is

absent. In well F-6, the sandstone is in a position where only the top of the Verdigris Limestone was truncated.

## Evidence From Cross Sections

The cross sections (Plates F and G) show that the rock units correlated in this study display a marked near-uniformity in thickness and dip. This is considered evidence of a set of tectonically stable environments of deposition.

Plates F and G demonstrate that the sandstone units within the Prue Interval can be correlated successfully on electric logs. Where these sandstone units are correlated, their cross-sectional geometries can be observed. The cross sections show several sandstone units. These rock units range in thickness from less than 10 feet to more than 100 feet. In some cases these sandstone units can be correlated on the SP log across distances exceeding 10 miles (Plate F, cross section C-C').

Some sandstone units are in channel-form trends where the Verdigris Limestone almost certainly was truncated by erosion (Plate F, cross section B-B': sandstone in wells B-1, B-2, B-3 and B-4). These particular sandstone units have an "erosional" base, as made evident by the SP log. This fact is convergent evidence, which supports the interpretation of sandstone units that overlie truncated Verdigris Limestone as having been channel-fill deposits.

Other sandstone units are stratigraphically higher (younger) and do not overlie the Verdigris Limestone (Plate F, cross section B-B': compare sandstone in wells B-6 and B-7 to sandstone in wells B-1, B-2, B-3, and B-4). These younger sandstone units have

cross-sectional geometries similar to sandstone units that are upon truncated Verdigris Limestone. Based on this evidence, the younger sandstone units are also interpreted as channel-fill deposits.

# CHAPTER 4

## DEDUCTION OF PRUE SANDSTONE DEPOSITIONAL ENVIRONMENT

During the course of this investigation multiple working hypotheses on the depositional environment of the Prue Sandstone developed. They are summarized as follows:

Working Hypothesis I: Some of the sandstone units in the Prue Sandstone Interval were deposited in distributary channels of a delta lobe.

Working Hypothesis II: Some of the sandstone units in the Prue Sandstone Interval are incised valley fills.

"Distributary" is defined as "An outflowing branch of a river, such as occurs characteristically on a delta." (Bates and Jackson, p. 146). The erosional feature created by a distributary is a distributary channel.

Incised valleys form when sea level declines to below the shelf break. Van Wagoner, Mitchum, Campion, and Rahmanian (1990, p. 23) define the shelf break as "the physiographic province in a basin defined by a change in dip from the shelf (dipping less than 1:1000 landward of the shelf break) to the slope (dipping more than 1:40 seaward of the shelf break)." After sea level falls, the shelf is exposed subaerially. Because base level is lowered, river systems adjust accordingly. As a natural response, river systems cut (incise) into the exposed shelf, forming incised valleys. During the subsequent sea-

level rise, the incised valleys are filled with sediment. These sediments are described as incised valley fills.

The following discussion of differences and similarities between strata deposited in incised valleys and distributary channels is taken from Emery and Myers (1996). Incised valleys and distributary channels both are characterized by strata in sharp basal contact with older materials. Incised valleys and distributaries may be filled by fining upwards successions of sediment. Some features allow these sediment bodies to be distinguished:

1. Distributary channels of a major delta lobe cut into, but not through the prodelta mudstone of the extant lobe.
2. The sequence boundary at the base of incised-valley fill generally shows evidence of a hiatus that existed during the time of erosion.
3. Distributary channels are narrow. Distributary channels of the modern Mississippi River are 500 to 5,500 feet wide. Incised valleys of major streams typically are 2 to 8 miles wide.
4. Deposits in distributaries stack to form multistoried sandstone bodies.
5. Distributary deposits are encased by delta-plain or channel-mouth bar deposits. Incised-valley fills commonly are encased in neritic mudstones.

Evidence regarding the environment of deposition of the Prue Sandstone Interval was acquired from well logs, cross sections and geologic maps. This evidence can be summarized as follows:

1. At the bases of some sandstone bodies in the Prue Interval are surfaces of

erosion. Other sandstone bodies have basal contacts that are gradational with underlying shale.

2. The large majority of sandstone in the Prue Interval was deposited in channels. Some were as narrow as 1 mile; others were as wide as 10 miles.
3. The Verdigris Limestone was partially eroded before deposition of the Prue Sandstone in some places. In some other places, the Verdigris was eroded completely.
4. The Prue Sandstone was deposited on a tectonically stable platform.

Within the limitations of this evidence, two working hypothesis for the depositional environment of the Prue Sandstone were tested. Working Hypothesis I states that some of the sandstone units in the Prue Sandstone Interval were deposited in distributary channels of a delta lobe. Evidence to support this hypothesis includes the following:

1. Some sandstone bodies in the Prue Interval are in erosional contact with underlying rocks.
2. The Prue sandstone Interval was deposited on a tectonically stable platform.

Evidence to refute hypothesis I includes the following:

3. The large majority of sandstone in the Prue Interval is in belts that are 1-10 miles wide. According to Emery and Myers (1996), distributary channels typically are not this wide.
4. The Verdigris Limestone was completely removed before deposition of sandstone in some places. Distributary channels do not erode through the

prodeltaic mudstone of the extant lobe. The Verdigris necessarily would underlie prodeltaic mudstone. Therefore, the channels were not distributary channels.

Working Hypothesis II states that some of the sandstone units in the Prue Sandstone Interval are incised valley fills. Evidence to support Working Hypothesis II is as follows:

1. Some sandstone units in the Prue Sandstone Interval are in erosional contact with underlying rocks.
2. The large majority of sandstone in the Prue Sandstone Interval is in belts that are 1-10 miles wide.
3. In some places, the Verdigris Limestone was completely eroded before deposition of the Prue Sandstone.
4. The Prue Sandstone Interval was deposited on a tectonically stable platform.

Based on the aggregate evidence, the hypothesis that sandstone units in the Prue Sandstone Interval are incised valley fills is the more probable.

# CHAPTER 5

## USE OF CANVAS VERSION 3.5 DRAWING PROGRAM TO CONSTRUCT GEOLOGIC MAPS

The author used Canvas Version 3.5 drawing program to construct geologic maps used in this study. This chapter explains the major advantages and disadvantages of this method.

The primary advantage of using computer software to construct geologic maps is the fact that a geologic map can be stored in digital format. Multiple copies of the map can be made.

Another advantage to using the Canvas program is that a high-quality base map can be produced in a short period of time. The base map includes everything in a completed map except the contour values and the contour lines. The base map used in this study was constructed in less than one day. This is because the base map essentially comprises straight lines (such as section lines), text (township labels, section numbers), and simple polygons with straight sides (city boundaries).

Using Canvas was very time intensive in several ways. First, every well spot had to be placed on the map. To accomplish this, a well location must be read from a data sheet. Then this location must be found on the base map, which is displayed on the computer screen. Finally, the well spot is placed in position, and the process is repeated until all well spots are placed. The process took approximately one minute per well spot. Placing the totality of well spots required more than 9 hours of work.

The next step in construction of geologic maps was to place the data next to the well spots. This process is similar to placing the well spots. A well location is read, and its corresponding well spot is located on the computer screen. Then, the appropriate data are placed next to the well spot. In Canvas, information can be stored in layers. These layers can be hidden from view. For example, if a user wishes to view the isopach thickness of a formation, he or she can hide the values for the isolith map, structural contour maps, etc. When hidden, these layers will not be seen on the monitor, nor will they print. For this thesis, five maps were constructed. This required five different kinds of data to be placed near each well spot. Each set of data was stored in a different layer. Each layer required that the appropriate data be entered for each well spot. This took approximately one minute per well spot. More than 45 hours were required to enter the well-data for all five layers.

Canvas is a *drawing* program, not a *mapping* program. By design, Canvas does not generate contour maps. To produce a contour map, a base map was first printed with the well spots and the appropriate elevations. The contour lines were then drawn on the base map using a pencil. This did not generate a presentation-quality map. To incorporate the contour lines into the Canvas drawing program, the base map was converted to digital format by a scanner. No large-format scanners were available, so the map (36" x 45") was cut into 8.5" x 13" pieces. Each piece was individually scanned into the computer. The contour lines on the scans could then be traced or "digitized". These traces were stored as a different layer. When all contour lines were traced, the layer that stored the scans was hidden, and the traces of the contour lines were visible.

Cutting, scanning, and tracing the contour lines also was very time intensive. The greater the number of contour lines, the longer it took to digitize them. Generally, 10 to 15 hours were required to cut, scan, and digitize one map.

Another limitation to producing maps in this manner is the fact that access to a plotter is required. A plotter is essentially a large printer. For this project a plotter which could produce images 36 inches wide was required. Paper for these machines is generally very expensive. The author paid $78.00 for one roll of paper. This amount of paper was sufficient to print only one set of maps. Four sets of maps are required when submitting a thesis, so this was a very expensive method indeed.

The major disadvantage with using Canvas to generate maps is that it essentially involves all of the steps of traditional drafting, in addition to extremely time-intensive processes required to digitize contour lines. Also, access to a plotter and expensive paper is required. However, the result of these processes is a presentation-quality map that is very reproducible, and easily portable (via diskette).

# CHAPTER 5

## CONCLUSIONS

During the course of this investigation, knowledge was gained about subsurface methods, as well as about the Prue Sandstone Interval. This chapter summarizes the major points of information gained from this study.

Historically, studies of Desmoinesian rocks in north-central Oklahoma have been carried out using traditional lithostratigraphic techniques. For example, early studies referred to sandstone in the Prue Interval as "shoestring sand". Many of these studies simply attempted the correlation of these sandstones in the subsurface. In studies that followed, authors investigated the stratigraphic significance of various rock units. Some authors commented on the apparent cyclicity of rocks of the Cabaniss and Marmaton Groups. In the past decade, several researchers have attempted to study these rocks in a chronostratigraphic framework using concepts of sequence stratigraphy.

In general, rock units of the Cabaniss and Marmaton Groups can be correlated over long distances. Correlation is sometimes difficult, due to variation in the log signatures of a given marker unit. Perhaps this is part of the reason for disagreements concerning the boundaries of groups within the Desmoinesian Stage.

Traditional mapping techniques are useful in delineating the structural attitudes, thicknesses, and areal extents of rock units. Structural contour maps of the top of the Oswego Limestone and the Verdigris Limestone show that rocks of the Desmoinesian Stage dip westward at less than one degree. The Verdigris Limestone Coded Log

Signature Map shows that the Verdigris Limestone is present in most of the study area, except where it was removed by erosion. The Net Sandstone Isolith Map showed that sandstone within the Prue Interval is distributed in sheets, elongate bands, and pods. the Isopach Map, Prue Sandstone Interval depicts paleotopography of the surface on which the Prue Sandstone Interval was deposited, and this surface shows the configurations of the deepest valleys are coincident with areas of maximal sandstone thickness and erosion of the Verdigris Limestone. Cross sections indicate the geometries and stratigraphic positions of rock units. Evidence from these maps and cross sections may be useful in interpreting the depositional environments of a rock unit.

Most of the techniques employed in this investigation should be used in future investigations of this type. Extensive investigation of the Prue sandstone Interval would be required for unequivocal interpretation of the general depositional environment of this rock unit. Future work should utilize cores, bit cuttings, seismic data, and outcrops. Analysis of cores, cuttings, and outcrops should provide evidence of depositional environments that is much beyond the resolution permitted by well logs. This evidence should be used to evaluate the incised-valley-fill hypothesis of this work, as well as other working hypotheses that are likely to evolve. Future work should include construction of net-sandstone isolith maps, isopach maps, and structural contour maps. These maps provide evidence that is useful in deducing depositional environments. In future work, well-log analysis should be more detailed. Classification systems for log signatures of the Prue Sandstone Interval and the Verdigris Limestone must be refined if they are to be used to partition the facies of the Prue Sandstone.

Researchers are cautioned that producing maps using computer drafting software can be unexpectedly costly in terms of time and money. Computer software designed specifically for geologic mapping should be used in geologic investigations of this type.

# BIBLIOGRAPHY


AKMAL, M. G., 1953, Subsurface geology of northeast Lincoln and southeast Payne Counties, Oklahoma: Shale Shaker, v. 3, no. 9, p. 5-16

ALBANO, M. A., 1973, Subsurface stratigraphic analysis "Cherokee" Group (Pennsylvanian) northeast Cleveland County, Oklahoma, part 1: Shale Shaker v. 25, no. 5, p. 94-103.

ALBANO, M. A., 1973, Subsurface stratigraphic analysis "Cherokee" Group (Pennsylvanian) northeast Cleveland County, Oklahoma, part 2: Shale Shaker v. 25, no. 6, p. 114-123.

ALBANO, M. A., 1973, Subsurface stratigraphic analysis "Cherokee" Group (Pennsylvanian) northeast Cleveland County, Oklahoma, part 3: Shale Shaker v. 25, no. 7, p. 134-143.

ANDRESEN, M. J., 1962, Paleodrainage patterns: their mapping from subsurface data and their paleogeographic value: American Association of Petroleum Geologists Bulletin, v. 46, no. 3, p. 398-405.

ASQUITH, G.B., 1982, Basic well log analysis for geologists: Tulsa, American Association of Petroleum Geologists, 216 p.

BATES, R. L., AND JACKSON, J. A., eds., 1984, Dictionary of geological terms: New York, Anchor Books, 571 p.

BERG, O. R., 1969, Cherokee Group west flank of the Nemaha Ridge: Shale Shaker, v. 19, no. 8, p. 134-146.

BOARDMAN, D. R. II, 1998, personal communication.

BRANSON, C. C., 1954, Field conference on Desmoinesian rocks of northeastern Oklahoma: Oklahoma Geological Survey Guide Book II, 41 p.

BRENNER, R. L., 1995, Sequences and cyclothems in upper portion of Cherokee Group (middle Pennsylvanian, Desmoinesian), mid-continent, U.S.A., *in* Hyne, N. J., ed., Sequence stratigraphy of the Mid-continent: Tulsa, Tulsa Geological Society Special Publication No. 4, 351 p.

BUSCH, D. A., 1975, Genetic units in delta prospecting: American Association of Petroleum Geologists Bulletin, v.55, no. 8, p. 1137-1154.

CLAYTON, J. M., 1965, Paleodepositional environments of the "Cherokee" Sands of central Payne County, Oklahoma: Shale Shaker, v. 16, no. 3, p. 50-66.

CLEAVES, A. W., 1997, personal communication.

COLE, J. G., 1969, Cherokee Group east flank of the Nemaha Ridge: Shale Shaker, v. 19, nos. 8 & 9, p. 134-146; 150-161.

DALRYMPLE, R. W., BOYD, R., AND ZAITLIN, B. A., 1994, History of research, types and internal organisation of incised-valley systems: introduction to the volume, *in* Dalrymple, R. W., Boyd, R., and Zaitlin, B. A., eds., Incised valley systems: origin and sedimentary sequences: Tulsa, Society for Sedimentary Geology Special Publication No. 51, p. 3-10.

DOTT, R. H., 1992, An introduction to the ups and downs of eustasy, *in* Eustasy: the historical ups and downs of a major geological concept: Boulder, Geological Society of America Memoir 180, p. 1-16.

ECE, O. I., 1989, Organic maturation and paleoceanographic/paleogeographic implications of the Desmoinesian cyclothemic Excello black shale of the Midcontinent, U.S.A.: Shale Shaker, v. 14, no. 5, p. 90-103.

EMERY, D. AND MYERS, K. J., eds., 1996, Sequence Stratigraphy: Oxford, Blackwell Science, 297 p.

FORGOTSON, J. M., 1957, Nature, usage and definition of marker-defined vertically segregated rock units: American Association of Petroleum Geologists Bulletin, v. 41, no. 9, p. 2108-2113.

GRAVES, J. M., 1955, Subsurface geology of a portion of Lincoln and Payne Counties, Oklahoma: Shale Shaker, v. 6, no. 1, p. 1-38.

HANKE, H. W., 1967, Subsurface stratigraphic analysis of the Cherokee Group in north-central Creek County, Oklahoma: Shale Shaker, v. 17, no.8, p. 150-167.

JOHNSON, K. S., 1971, Guidebook for geologic field trips in Oklahoma: Oklahoma Geological Survey Educational Publication 2, 15 p.

JORDAN, L., 1957, Subsurface stratigraphic names of Oklahoma: Oklahoma Geological Survey Guidebook VI, 220 p.

McELROY, M. N., 1961, Isopach and lithofacies study of the Desmoinesian Series of north-central Oklahoma: Shale Shaker, v. 12, no. 1, p. 2-22.

OAKES, M. C., 1953, Krebs and Cabaniss Groups, of Pennsylvanian age, in Oklahoma: American Association of Petroleum Geologists Bulletin, v. 37, no. 6, p. 1523-1526.

POTTER, P. E., 1967, Sand bodies and sedimentary environments: a review: American Association of Petroleum Geologists Bulletin, v. 51, no. 3, p. 337-365.

PROTHERO, D. R., 1990, Interpreting the stratigraphic record: New York, W. H. Freeman & Company, 410 p.

PUCKETTE, J. O., 1990, Depositional setting, facies, and petrology of Cabaniss (upper "Cherokee) Group in Beckham, Dewey, Custer, Ellis, Roger Mills, and Washita Counties, Oklahoma: Unpublished M.S. thesis, Oklahoma State University, 144 p.

ROARK, S. D., 1992 Selected methods of investigation of "old" electric logs of the Lower Skinner Sandstone, and computer-assisted mapping of the "Cherokee" Group, Township 15 North, Range 3 East, Lincoln County, Oklahoma: Unpublished M.S. thesis, Oklahoma State University, 87 p.

ROPP, C. R., 1991, Facies, diagenetic, and subsurface evaluation of the Prue Sandstone on the Central Oklahoma Platform: Unpublished M.S. thesis, Oklahoma State University, 90 p.

SCHUMM, S. A., AND ETHRIDGE, F. G., 1994, Origin, evolution and morphology of fluvial valleys, *in* Dalrymple, R. W., Boyd, R., and Zaitlin, B. A., eds., Incised valley systems: origin and sedimentary sequences: Tulsa, Society for Sedimentary Geology Special Publication No. 51, p. 11-27.

SHELTON, J. W., 1996, Distinction, or indistinction of fluvial-dominated deltaic reservoirs, *in* Johnson, K. S., ed., Deltaic reservoirs in the southern Midcontinent, 1993 symposium: Oklahoma Geological Survey Circular 98, 295 p.

SHELTON, J. W., ROSS, J. S., GARDEN, A. J., AND FRANKS, J. L., 1985, Geology and mineral resources of Payne County, Oklahoma: Oklahoma Geological Survey Bulletin 137, 85 p.

SHIPLEY, R. D., 1975, Local depositional trends of "Cherokee" Sandstones, Payne County, Oklahoma: Unpublished M.S. thesis, Oklahoma State University, 48 p.

STEWART, G. F., 1998, personal communication.

VAN WAGONER, J. C., MITCHUM, R. M., CAMPION, K. M., AND RAHMANIAN, V. D., 1990, Siliciclastic sequence stratigraphy in well logs, cores, and outcrops: Tulsa, American Association of Petroleum Geologists Methods In Exploration Series No. 7, 55 p.

# APPENDIXES

# APPENDIX A

# DEFINITION OF RESERVOIR SANDSTONE

# Appendix A

## Definition of Reservoir Sandstone

The first objective of this study was to map the distribution of sandstone deposits within the Prue Sandstone Interval. To accomplish this objective, a definition of reservoir-sandstone was necessary. Reservoir sandstone" is rock that is porous enough and permeable enough to store and yield petroleum in profitable quantities. Direct measurement necessary to delineate sandstone based on grain size was impossible, because neither cores, cuttings, nor outcrops were sources of information. As stated earlier, well logs were the primary data source for this study. The ages of the well logs varied greatly. The older well logs studied were recorded in the late 1940's. The younger were recorded in the late 1980's. Most older logs included a Spontaneous Potential (SP) log and one or more impedance logs. Many suites of the younger logs included SP logs, resistivity logs, caliper logs, gamma-ray logs, micro-resistivity logs, and neutron-density logs. It was necessary, therefore, to devise a method for interpreting every log, regardless of its age.

According to Asquith (1982, p. 28), "Primarily the spontaneous potential log is used to identify impermeable zones such as shale, and permeable zones such as sand." Every well log included an SP log, this made the SP log the obvious basis for an operational definition of reservoir sandstone.

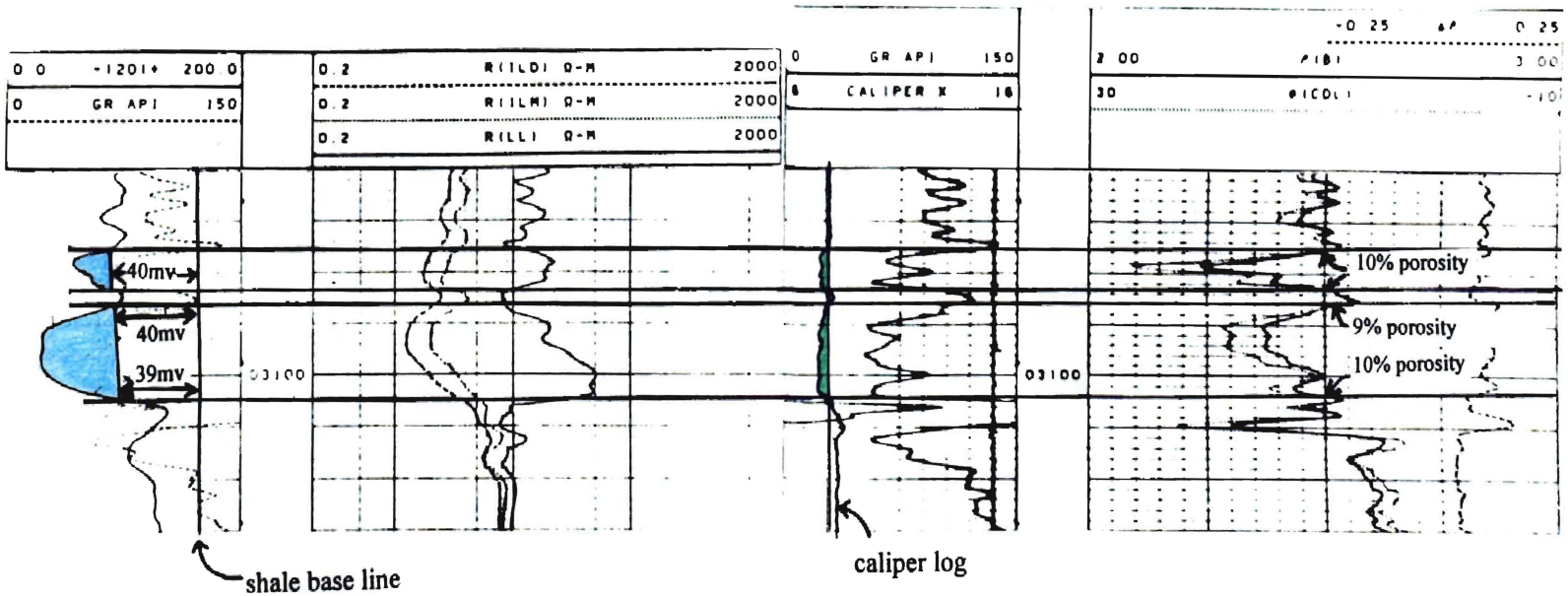
The SP response is "...brought about by differences in salinities between mud filtrate ($R_{mf}$) and formation water resistivity ($R_w$) within permeable beds." (Asquith, 1982, p. 28) The more-permeable strata, such as sandstone, show a greater SP response

than non-permeable zones, such as shale (although the SP curve is more an indicator of ion-permeability than fluid permeability) (Asquith, 1982). In this manner, it is possible to define "reservoir sandstone" based solely on SP log-response.

The following method was used to determine the minimal negative deflection of the SP curve required to classify rock as reservoir sandstone (after Roark, 1992).

Thirty well-log-suites were comprised of an SP log, a caliper log, and a porosity log. These logs were analyzed for the purpose of defining net reservoir-sandstone. Some caliper logs indicated mudcake within the Prue Sandstone Interval. This was regarded as positive evidence of "discernibly porous and permeable rock" (Roark, 1992), the idea being that if the rock takes fluid (mud filtrate), it will yield fluid, and is therefore porous *and* permeable.

The upper and lower limits of the mudcake, as recorded on caliper logs, were correlated to the SP logs and to the porosity log (page 51). Negative deflections of the SP logs were recorded, as were the porosities. Page 52 shows observed SP deflections and porosity of the upper and lower boundaries of all intervals that showed evidence of mudcake. The arithmetic mean of porosity was 14%. The arithmetic mean of the SP deflections was -45 millivolts. Therefore, all strata of the Prue Sandstone Interval with a negative response of -45 millivolts or greater were classified as " reservoir sandstone". This definition is conservative; eight samples showed that sandstone with mudcake has porosity of 11% or less. Rock mapped as reservoir sandstone, under criteria described above, almost certainly is a porous and permeable reservoir.




Reservoir sandstone delineated by mudcake. Mudcake is shaded green. Upper and lower boundaries of mudcake are correlated to the SP log and to the density-porosity log. Intersection of correlation lines and the density-porosity curve indicate porosity of approximately 10% at upper and lower boundaries of mudcake. Intersection of correlation lines and the SP curve describes a line positioned approximately 40 millivolts from the shale base line. On the SP log, intervals interpreted as resevoir sandstone are shaded blue.

# MUDCAKE-POROSITY-S.P. CORRELATION DATA

| WELL NAME | T&R | SECTION | LOCATION | POROSITY UPPER LIMIT | POROSITY LOWER LIMIT | S.P. DEFLECTION UPPER LIMIT | S.P. DEFLECTION LOWER LIMIT |
|---|---|---|---|---|---|---|---|
| Parker no. 1-13 | T16N-R4E | 13 | NE NE SE | 8% | 8% | -35 | -20 |
| Hubbard "A" no. 1 | T16N-R4E | 29 | C SW SW | 12% | 8% | -20 | -20 |
| No. 2 McIntire | T16N-R4E | 29 | C E/2 NW | 5% | 5% | -18 | -18 |
| State #1 | T16N-R5E | 16 | SW NW | 12% | 12% | -38 | -38 |
| Williams No. 2-27 | T16N-R5E | 27 | SW SE NW | 15% | 15% | -38 | -38 |
| Dingman No. 2 | T16N-R5E | 27 | SW SW NE | 13% | 14% | -32 | -32 |
| Hetzel No. 3-27 | T16N-R5E | 27 | NE NW SW | 16% | 12% | -28 | -25 |
| Heizelman No. 2 | T16N-R5E | 28 | SE SE NE | 11% | 11% | -27 | -30 |
| Vickers No. 1 | T16N-R5E | 29 | C NW NE | 14% | 14% | -16 | -20 |
| Houseman #1 | T16N-R5E | 29 | C N/2 NW | 11% | 11% | -25 | -40 |
| Shaw #5 | T16N-R5E | 30 | SW NE NE | 14% | 14% | -35 | -60 |
| Coffey No. 1 | T16N-R5E | 30 | C NE SE NW | 14% | 14% | -60 | -45 |
| Rush #1 | T16N-R5E | 31 | C SW NE | 17% | 19% | -32 | -100 |
| Penrod #1 | T16N-R5E | 31 | C SW NW | 13% | 13% | -37 | -37 |
| Allen Lease No. 1 | T16N-R5E | 36 | N/2 SW SW NW | 14% | 14% | -46 | -28 |
| Wright #1-34 | T16N-R6E | 7 | E/2 SE NE | 11% | 13% | -18 | -35 |
| Vickery #2-18 | T16N-R6E | 18 | NW SE | 9% | 9% | -55 | -47 |
| Schad #1-34 | T16N-R6E | 34 | SE NE SW | 13% | 12% | -50 | -46 |
| Bagley No. 1-1 | T17N-R4E | 1 | NW NW SW | 17% | 17% | -83 | -83 |
| Buss No. 1-9 | T17N-R5E | 9 | NE NW SE | 13% | 11% | -57 | -40 |
| Ladd #1 | T17N-R5E | 23 | NE NE NE | 14% | 12% | -40 | -65 |
| Peterman No. 1 | T17N-R6E | 14 | NW NE SW | 17% | 15% | -115 | -80 |
| Myrick #1-A | T17N-R6E | 27 | C N/2 NW SW | 12% | 12% | -40 | -52 |
| Mary Ryan #1 | T18N-R5E | 3 | N/2 NW NE | 9% | 9% | -30 | -50 |
| Green #3 | T18N-R5E | 13 | SW SE SW | 15% | 15% | -55 | -91 |
| State Payne No. 2 | T18N-R5E | 16 | SW SW SW | 9% | 10% | -40 | -39 |
| Thompson #1-22 | T18N-R5E | 22 | NW SE NW | 14% | 14% | -45 | -45 |
| J. Exton #1 | T18N-R5E | 23 | NE SW SE | 16% | 14% | -50 | -55 |
| State of Oklahoma No. 40-1 | T18N-R5E | 36 | SE SE SE | 13% | 13% | -50 | -50 |

# APPENDIX B

# WELL-LOG DATA

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USGLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE MORPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16N 4E | 1 | SW SW NW | DIRICKSON & LEWIS | CASTATOR #1 | -4157 | 1030 | -2470 | -2510 | -2568 | -2594 | -2669 | -2805 | 75 | 0 | 0 | 1 |
| 16N 4E | 2 | SE SE SE | GAMMA RESOURCES | BROWN NO. 1-2 | -3727 | 1001 | -2478 | -2522 | -2580 | -2592 | -2665 | NP | 73 | 0 | 0 | 1 |
| 16N 4E | 3 | SW NE SW | BIG FOUR | CARPENTER #1 | -3989 | 991 | -2526 | -2558 | -2612 | -2623 | -2732 | -2881 | 109 | 87 | 87 | 2 |
| 16N 4E | 3 | SW NE SE | R.W. VIERSEN | NOLLSCH #1 | -4001 | 1066 | -2502 | -2536 | -2596 | -2616 | -2715 | -2864 | 99 | 93 | 93 | 2 |
| 16N 4E | 4 | NW NW SE | DUDLEY & HEATH | VANDERBILT #1 | -4644 | 991 | -2588 | -2624 | -2682 | -2704 | -2779 | -2909 | 75 | 0 | 0 | 1 |
| 16N 4E | 4 | C SE NW | VAUGHN GOOD | MOSE NO.1 | -4435 | 1018 | -2583 | -2620 | -2679 | -2694 | -2752 | -2907 | 58 | 0 | 0 | 1 |
| 16N 4E | 5 | SE SE NE | GARR-WOOLLEY | HART #1 | -4691 | 1032 | -2626 | -2659 | -2718 | -2740 | -2793 | -2937 | 53 | 0 | 0 | 1 |
| 16N 4E | 6 | SW NW | ATLANTIC RICHFIELD | GIPSON NO. 1 | -4493 | 987 | -2693 | -2734 | -2792 | -2806 | -2862 | -3003 | 56 | 0 | 0 | 0 |
| 16N 4E | 7 | SW NW | ARCO OIL & GAS CO. | LAFOLETTE NO. 1 | -4435 | 992 | -2708 | -2733 | -2804 | -2817 | -2878 | -3017 | 61 | 6 | 6 | 1 |
| 16N 4E | 7 | NW NW SE | RUSSELL MAGUIRE | HALL #1 | -4769 | 1025 | -2704 | -2742 | -2807 | -2821 | -2885 | -3015 | 64 | 0 | 0 | 0 |
| 16N 4E | 7 | NW NE NE | SCAT | HALL NO. 1 | -4726 | 1007 | -2693 | -2730 | -2789 | -2803 | -2865 | -3003 | 62 | 0 | 0 | 0 |
| 16N 4E | 8 | SW SW SE | GEORGE P. CAULKINS | SLOAN NO. 1 | -4115 | 963 | -2673 | -2714 | -2780 | -2806 | -2837 | -2983 | 31 | 0 | 0 | 0 |
| 16N 4E | 9 | SW | ATLANTIC RICHFIELD | KALKA NO. 1 | -4661 | 968 | -2618 | -2661 | -2716 | -2726 | -2809 | -2950 | 83 | 0 | 0 | 0 |
| 16N 4E | 10 | NW NW SW | CHAMPLIN REF. CO. | WAGNER #1 | -4619 | 973 | -2537 | -2575 | -2629 | -2639 | -2742 | -2890 | 103 | 91 | 91 | 2 |
| 16N 4E | 10 | NE NE SE | N.V. DUNCAN | BLEVINS & YOUNG #1 | -4649 | 1035 | -2537 | -2577 | -2637 | -2649 | -2733 | -2881 | 84 | 25 | 25 | 1 |
| 16N 4E | 10 | NE SW NE | O.F. WARREN | EVERETT WRIGHT NO. 1-A | -3983 | 988 | -2525 | -2562 | -2617 | -2638 | -2737 | -2889 | 99 | 88 | 88 | 1 |
| 16N 4E | 12 | SE SE NE | GULF COAST WESTERN | STEVENS #1 | -4528 | 1018 | -2440 | -2456 | -2519 | -2532 | -2610 | -2765 | 78 | 5 | 5 | 0 |
| 16N 4E | 12 | NE NE SW | M.J. SILBERMAN | NO. 1 REGGIE | -4495 | 959 | -2477 | -2503 | -2561 | -2573 | -2643 | -2792 | 70 | 0 | 0 | 0 |
| 16N 4E | 13 | SE NW NE | GAMMA RESOURCES | LAUGHLIN NO. 2-13 | -3614 | 974 | -2436 | -2466 | -2524 | -2540 | -2605 | NP | 65 | 0 | 0 | 1 |
| 16N 4E | 13 | NE NE SE | GAMMA RESOURCES | PARKER NO. 1-13 | -3628 | 961 | -2445 | -2483 | -2529 | -2539 | -2618 | NP | 78 | 0 | 0 | 1 |
| 16N 4E | 13 | SW SW NW | LEO J. PORTMAN | E.W. WATKINS #1 | -4582 | 974 | -2494 | -2522 | -2585 | -2595 | -2673 | -2868 | 78 | 36 | 36 | 1 |
| 16N 4E | 15 | SE SW SW | THE TEXAS CO. | SODERSTROM #1 | -4674 | 913 | -2612 | -2643 | -2697 | -2705 | -2795 | -2948 | 90 | 50 | 50 | 2 |
| 16N 4E | 16 | NW NW SE | SCAT | #1 STATE SCHOOL LAND | -4665 | 936 | -2621 | -2665 | -2716 | -2724 | -2800 | -2939 | 76 | 0 | 0 | 0 |
| 16N 4E | 17 | SW SW SW | JERNIGAN & MORGAN | PETERS #1 | -4831 | 1029 | -2728 | -2776 | -2835 | -2854 | -2901 | -3040 | 47 | 0 | 0 | 0 |
| 16N 4E | 17 | SW SE SE | TEXAS PACIFIC COAL | P.F. BILBY #1 | -4754 | 989 | -2690 | -2726 | -2787 | -2808 | -2847 | -3001 | 39 | 0 | 0 | 0 |
| 16N 4E | 18 | SE SW SW | BLACKWELL OIL CO | ANDERSON #1 | -4826 | 999 | -2776 | -2818 | -2883 | -2901 | -2949 | -3084 | 48 | 0 | 0 | 0 |
| 16N 4E | 19 | SE SW | L & N EXPL., INC. | GREG-MIKE #1 | -4332 | 971 | -2794 | -2840 | -2879 | -2892 | -2969 | -3111 | 77 | 0 | 0 | 2 |
| 16N 4E | 20 | SE NW SE | BASS ENT. PROD. CO. | BRITTON NO. 1 | -4848 | 1019 | -2739 | -2781 | -2839 | -2846 | -2916 | -3030 | 70 | 0 | 0 | 1 |
| 16N 4E | 20 | SE SE SW | R.L. KEMP & GLENN | PARKER ESTATE #1 | -4414 | 1004 | -2745 | -2793 | -2838 | -2847 | -2921 | -3068 | 74 | 0 | 0 | 0 |
| 16N 4E | 20 | C S/2 SE SE | TXO PRODUCTION CORP. | BRITTON "A" NO. 1 | -4252 | 1018 | -2716 | -2757 | -2820 | -2840 | -2893 | -3052 | 53 | 0 | 0 | 0 |
| 16N 4E | 21 | SW SW SW | BROWER | EYER NO. 1 | -4185 | 996 | -2705 | -2747 | -2805 | -2814 | -2887 | -3038 | 73 | 0 | 0 | 0 |
| 16N 4E | 22 | SW SW SW | D.F. O'ROURKE | HERMANN #1 | -4152 | 957 | -2638 | -2668 | -2723 | -2735 | -2812 | -2766 | 77 | 40 | 40 | 2 |
| 16N 4E | 22 | SE SE NE | WILCOX OIL CO. | HERMANN #1 | -4595 | 905 | -2574 | -2602 | -2671 | -2684 | -2761 | -2904 | 77 | 22 | 16 | 2 |
| 16N 4E | 23 | SW NW SE | THOMPSON WAGNER | MCINTIRE #1 | -4223 | 957 | -2548 | -2574 | -2623 | -2633 | -2728 | -2886 | 95 | 47 | 47 | 2 |
| 16N 4E | 24 | SW SW NW | J.TOM GRIMMET | ANDERSON #1 | -4579 | 961 | -2512 | -2539 | -2594 | -2608 | -2687 | -2839 | 79 | 39 | 39 | 2 |
| 16N 4E | 25 | NE SE SE | AN-SON | LAWRENCE #1 | -4629 | 981 | -2497 | -2518 | -2564 | -2578 | -2673 | -2829 | 95 | 15 | 15 | 0 |
| 16N 4E | 25 | SW SW SW | L.B. JACKSON | BILES ESTATE #1 | -4180 | 923 | -2557 | -2579 | -2623 | -2637 | -2726 | -2891 | 89 | 47 | 47 | 0 |
| 16N 4E | 26 | SW SW NW | DAVIDOR & DAVIDOR | HANN NO. 1 | -3997 | 902 | -2563 | -2588 | -2643 | -2656 | -2748 | -2910 | 92 | 60 | 60 | 2 |
| 16N 4E | 26 | C SE SE | JEFFERSON WILLIAMS... | RODGERS NO. 1 | -4126 | 938 | -2582 | -2598 | -2632 | -2646 | -2729 | -2896 | 83 | 48 | 36 | 0 |
| 16N 4E | 26 | C W/2 SW | PAN WESTERN | SEITSINGER NO. 1 | -4000 | 885 | -2593 | -2616 | -2662 | -2675 | -2767 | -2927 | 92 | 42 | 42 | 1 |
| 16N 4E | 27 | SW NE SW | WARREN OIL | HELEN CRANE #1 | -4664 | 907 | -2624 | -2651 | -2700 | -2713 | -2801 | -2958 | 88 | 38 | 38 | 1 |
| 16N 4E | 28 | C W/2 NE SW | WARD | WANNAMAKER #28-1 | -4238 | 1008 | -2710 | -2745 | -2796 | -2809 | -2880 | -2992 | 71 | 0 | 0 | 1 |
| 16N 4E | 29 | NW NW SE | DAVIDOR & DAVIDOR | ANDERSON #1 | -4390 | 985 | -2749 | -2795 | -2847 | -2865 | -2921 | -3082 | 56 | 0 | 0 | 0 |
| 16N 4E | 29 | C E/2 NW | KENO OIL & GAS | NO. 2 MCINTIRE | -4244 | 991 | -2749 | -2798 | -2853 | -2862 | -2931 | -3050 | 69 | 0 | 0 | 0 |
| 16N 4E | 29 | NE NE SE | KENO OIL & GAS | COOL NO. 1 | -4133 | 985 | -2733 | -2774 | -2825 | -2839 | -2902 | -3042 | 63 | 0 | 0 | 0 |
| 16N 4E | 29 | C SW SW | TEXAS OIL & GAS | HUBBARD "A" NO. 1 | -4231 | 952 | -2768 | -2817 | -2869 | -2888 | -2938 | -3057 | 50 | 0 | 0 | 0 |
| 16N 4E | 30 | NW NW NE | JAVELIN OIL CO. | MYERS #1 | -4867 | 987 | -2786 | -2831 | -2892 | -2905 | -2962 | -3108 | 57 | 0 | 0 | 0 |
| 16N 4E | 30 | NW SE | P. F. BEELER | HAZEL #1 | -4258 | 958 | -2779 | -2831 | -2889 | -2903 | -2962 | -3108 | 59 | 0 | 0 | 0 |
| 16N 4E | 31 | SE SE NW | ARTHUR SILBERMAN | PERRIN #1 | -4352 | 915 | -2823 | -2873 | -2925 | -2940 | -3003 | -3148 | 63 | 0 | 0 | 1 |
| 16N 4E | 32 | NW SE NW | PAN WESTERN | MCFARLIN NO. 1 | -4265 | 972 | -2778 | -2814 | -2871 | -2883 | -2940 | -3098 | 57 | 0 | 0 | 0 |
| 16N 4E | 32 | W/2 SE | PAN WESTERN | ROZELL NO. 1-32 | -4202 | 929 | -2783 | -2831 | -2871 | -2880 | -2950 | -3099 | 70 | 8 | 8 | 0 |
| 16N 4E | 33 | SW SW SE | DIRICKSON & LEWIS & R.I. KEMP | WISELEY #1 | -4329 | 922 | -2747 | -2783 | -2821 | -2838 | -2901 | -3063 | 63 | 0 | 0 | 0 |
| 16N 4E | 33 | SW NE | KENO OIL AND GAS, INC. | GAUT NO. 33-1 | -4155 | 986 | -2714 | -2749 | -2794 | -2804 | -2860 | -3024 | 56 | 0 | 0 | 0 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16N 4E | 34 | NW NW NW | D. D. MORGAN | GARRETT #1 | -4787 | 976 | -2680 | -2715 | -2772 | -2792 | -2841 | -2898 | 49 | 0 | 0 | 0 |
| 16N 4E | 35 | NW NE NW | FOSTER DRLG. CO. | REEDY #1 | -3866 | 876 | -2600 | -2624 | -2666 | -2674 | -2774 | -2899 | 100 | 67 | 54 | 2 |
| 16N 4E | 36 | SW SW SE | JOSALINE PROD CO. | STATE #1 | -4093 | 932 | -2547 | -2572 | -2607 | -2616 | -2717 | -2882 | 101 | 57 | 57 | 2 |
| 16N 4E | 36 | SW SW NE | TRANS-VIKING | SCHOOL LAND #1 | -3975 | 915 | -2545 | -2568 | -2613 | -2624 | -2710 | -2869 | 86 | 38 | 38 | 2 |
| 16N 5E | 1 | SE SW NW | N.V. DUNCAN | OESTMANN #1 | -3501 | 901 | -2099 | -2124 | -2171 | -2197 | -2257 | -2421 | 60 | 4 | 4 | 0 |
| 16N 5E | 1 | C SE SW SW | THE FEAGIN CO. | KREBS #1 | -3600 | 927 | -2131 | -2154 | -2203 | -2221 | -2293 | -2461 | 72 | 8 | 8 | 0 |
| 16N 5E | 1 | NW NW SW | WOODS DRLG. | KREB #1 | -3717 | 911 | -2122 | -2446 | -2191 | -2212 | -2276 | -2441 | 64 | 0 | 0 | 0 |
| 16N 5E | 1 | NW NW NW | WOODS DRLG. CO. | OESTMANN #1 | -3676 | 875 | -2107 | -2130 | -2180 | -2195 | -2270 | -2433 | 75 | 0 | 0 | 0 |
| 16N 5E | 2 | SW NE NE | DIRICKSON & LEWIS | NOLTE #2 | -3480 | 891 | -2128 | -2147 | -2199 | -2216 | -2285 | -2284 | 69 | 0 | 0 | 0 |
| 16N 5E | 3 | NW SW SW | KINGERY BROS. | HARMON #1 | -3668 | 954 | -2236 | -2263 | -2311 | -2326 | -2395 | -2557 | 69 | 0 | 0 | 1 |
| 16N 5E | 3 | SW SW NE | THREE STATES | DUNGAN NO.1 | -3686 | 978 | -2198 | -2222 | -2273 | -2283 | -2365 | -2522 | 82 | 0 | 0 | 0 |
| 16N 5E | 4 | C NW NE | DEEP ROCK OIL | ARGO #1 | -4509 | 927 | -2211 | -2244 | -2293 | -2310 | -2381 | -2533 | 71 | 11 | 11 | 1 |
| 16N 5E | 4 | NW NW NW | DIRICKSON & LEWIS | LONG #1 | -3821 | 924 | -2221 | -2256 | -2309 | -2324 | -2398 | -2556 | 74 | 0 | 0 | 0 |
| 16N 5E | 4 | SE SW SE | TRIGG DRLG. CO. | KROGMAN #1 | -3727 | 991 | -2259 | -2282 | -2332 | -2350 | -2422 | -2587 | 72 | 0 | 0 | 1 |
| 16N 5E | 6 | NW NE NW | TEXOLA DRLG. CO. | DAVIS #1 | -4439 | 1041 | -2294 | -2331 | -2387 | -2401 | -2476 | -2630 | 75 | 0 | 0 | 1 |
| 16N 5E | 7 | NE SW NW | A.L. SMITH | FICK #1 | -3936 | 1024 | -2426 | -2456 | -2511 | -2529 | -2586 | -2756 | 67 | 8 | 4 | 1 |
| 16N 5E | 8 | SE SW NE | BARON EXPL. CO. | FEDDERGEN #1 | -4478 | 1003 | -2340 | -2367 | -2424 | -2443 | -2511 | -2671 | 68 | 0 | 0 | 1 |
| 16N 5E | 8 | NE NE SE | R.L. KEMP - WHAN HOWARD DRLG. | SITTERLY #1 | -3886 | 1021 | -2357 | -2382 | -2439 | -2450 | -2529 | -2689 | 79 | 0 | 0 | 1 |
| 16N 5E | 9 | NE NE NW | J.R. TRIGG | WHEELER #1 | -3834 | 1049 | -2279 | -2311 | -2362 | -2379 | -2445 | -2609 | 66 | 0 | 0 | 1 |
| 16N 5E | 9 | NE NE SW | MID CONTINENT PETR. CO. | MCKEOWN #1 | -4433 | 1052 | -2342 | -2361 | -2399 | -2423 | -2473 | -2653 | 50 | 0 | 0 | 1 |
| 16N 5E | 10 | SE SE SE | ANDERSON-PRICHARD | MURPHY #1 | -3623 | 1006 | -2221 | -2243 | -2287 | -2299 | -2374 | -2549 | 75 | 12 | 12 | 0 |
| 16N 5E | 10 | SE NE NW | R.L. KEMP | OESTMANN #1 | -3699 | 974 | -2226 | -2251 | -2298 | -2316 | -2388 | -2558 | 72 | 0 | 0 | 1 |
| 16N 5E | 11 | SE SW SW | BARON KIDD | BISWELL #1 | -3687 | 981 | -2206 | -2229 | -2284 | -2299 | -2369 | -2539 | 70 | 12 | 12 | 0 |
| 16N 5E | 11 | NE NE NW | C.P. QUINLAN | WOLFE #1 | -3545 | 908 | -2132 | -2156 | -2206 | -2226 | -2288 | -2454 | 62 | 0 | 0 | 0 |
| 16N 5E | 11 | NE NE NW | CINCO OIL & GAS CORP. | WOLFF NO. 2 | -4039 | 912 | -2138 | -2158 | -2210 | -2235 | -2304 | -2457 | 69 | | | 1 |
| 16N 5E | 11 | SE SE SW | K & H DRLG. CO. | OESTMANN #1 | -3319 | 935 | -2193 | -2214 | -2264 | -2281 | -2348 | NP | 67 | 11 | 5 | 0 |
| 16N 5E | 11 | SE NE SE | LOGAN & COOPER | OSTERMANN #1 | -3635 | 970 | -2155 | -2180 | -2229 | -2244 | -2316 | -2490 | 72 | 10 | 10 | 0 |
| 16N 5E | 12 | SW NW NW | ADAIR & JENKINS | HANCOCK #1 | -3602 | 946 | -2136 | -2156 | -2202 | -2221 | -2291 | -2460 | 70 | 4 | 4 | 1 |
| 16N 5E | 13 | NW NW SE | SOONER STATE OIL CO. | GIBSON #1 | -4214 | 940 | -2139 | -2170 | -2220 | -2230 | -2310 | -2478 | 80 | 0 | 0 | 0 |
| 16N 5E | 15 | NE NE SW | SCHONWALD & REYNOLDS | WOODARD #1 | -3943 | 999 | -2268 | -2293 | -2339 | -2353 | -2419 | -2584 | 66 | 0 | 0 | 0 |
| 16N 5E | 16 | SW NW | OLD DOMINION EXPL. | STATE #1 | -3512 | 939 | -2361 | -2383 | -2441 | -2461 | -2524 | NP | 63 | 0 | 0 | 1 |
| 16N 5E | 17 | NW NW NE | F.A. GILLESPIE | FREEMAN #1 | -3915 | 965 | -2373 | -2402 | -2452 | -2463 | -2548 | -2707 | 85 | 0 | 0 | 1 |
| 16N 5E | 17 | NE SW NW | HUBBELL DRLG. CO. | MORRIS #1 | -4107 | 1051 | -2399 | -2428 | -2482 | -2501 | -2569 | -2731 | 68 | 0 | 0 | 1 |
| 16N 5E | 17 | SW SW SW | HUBBELL DRLG. CO. | SMITH JOSEY #1 | -3773 | 1004 | -2436 | -2463 | -2518 | -2538 | -2604 | -2765 | 66 | 16 | 16 | 1 |
| 16N 5E | 18 | NE NE SW | BAKER-MUNDAY DRLG. | MARTIN #1 | -3625 | 1002 | -2438 | -2468 | -2522 | -2538 | -2610 | NP | 72 | 20 | 10 | 1 |
| 16N 5E | 18 | SW NW SW | HILMER & MESSENGER | SENSLEY #1 | -3950 | 980 | -2460 | -2488 | -2548 | -2563 | -2630 | -2792 | 67 | 13 | 13 | 1 |
| 16N 5E | 20 | NE SW SW | MIDLAND CO-OP | WILSON #2 | -3639 | 990 | -2451 | -2477 | -2533 | -2553 | -2630 | NP | 77 | 34 | 18 | 1 |
| 16N 5E | 20 | SW NW SE | R.L. KEMP | BROWN #1 | -4022 | 918 | -2422 | -2449 | -2504 | -2518 | -2582 | -2747 | 64 | 7 | 7 | 0 |
| 16N 5E | 21 | NE NE SW | KINGERY BROTHERS | HASKIN #1 | -4439 | 953 | -2367 | -2394 | -2440 | -2454 | -2530 | -2691 | 76 | 0 | 0 | 1 |
| 16N 5E | 21 | C SE SW SW | OLD YORK DRLG. CO. INC. | HASKINS #1 | -3752 | 909 | -2388 | -2410 | -2461 | -2473 | -2551 | -2706 | 78 | 0 | 0 | 1 |
| 16N 5E | 22 | C W/2 SW | SPRINGFIELD OIL SERVICE | ALLEN NO. 1 | -4429 | 933 | -2337 | -2358 | -2412 | -2427 | -2494 | -2664 | 67 | 6 | 6 | 1 |
| 16N 5E | 23 | NW NW SE | APACHE OIL CORP | DINGMAN #1 | -3606 | 967 | -2243 | -2263 | -2316 | -2338 | -2402 | -2570 | 64 | 0 | 0 | 1 |
| 16N 5E | 23 | NW NW NE | WOODWARD & CO. | MARY BROWN #1 | -3647 | 999 | -2245 | -2266 | -2316 | -2326 | -2401 | -2571 | 75 | 0 | 0 | 1 |
| 16N 5E | 25 | SE SE SW | D.B. MALERNEE | PRAWICK #1 | -4279 | 945 | -2223 | -2251 | -2284 | -2295 | -2365 | -2545 | 70 | 0 | 0 | 1 |
| 16N 5E | 25 | NW NW NW | PAUL R. NAGLE | TRAWICK #1 | -4318 | 963 | -2225 | -2250 | -2297 | -2307 | -2388 | -2561 | 81 | 0 | 0 | 1 |
| 16N 5E | 25 | C SE NE | RESOURCE DEVEL., INC. | E J T #1-25 | -4249 | 991 | -2175 | -2203 | -2245 | -2253 | -2319 | -2487 | 66 | 0 | 0 | 1 |
| 16N 5E | 25 | C NE SW | ROCKWELL PETR. CORP. | TRAWICK #2-25 | -3713 | 985 | -2215 | -2227 | -2255 | -2266 | -2342 | -2515 | 76 | 18 | 18 | 1 |
| 16N 5E | 26 | NE NE NE | WOODWARD & CO. | L.M. TRAWICK #1 | -3600 | 967 | -2233 | -2253 | -2303 | -2313 | -2393 | -2566 | 80 | 4 | 4 | 1 |
| 16N 5E | 27 | NE NW SW | BROWER OIL & GAS CO. INC. | HETZEL NO. 3-27 | -3749 | 897 | -2359 | -2382 | -2440 | -2447 | -2507 | -2682 | 60 | 0 | 0 | 1 |
| 16N 5E | 27 | SW SW NE | BROWER OIL & GAS CO. INC. | DINGMAN #1 | -3730 | 927 | -2333 | -2354 | -2408 | -2415 | -2479 | -2654 | 64 | 0 | 0 | 1 |
| 16N 5E | 27 | SW SE NW | BROWER OIL & GAS CO. INC. | WILLIAMS NO. 2-27 | -4409 | 925 | -2355 | -2375 | -2430 | -2445 | -2505 | -2666 | 60 | 15 | 15 | 1 |
| 16N 5E | 27 | SW SW SW | HARPER-TURNER OIL | HETZEL #1 | -4410 | 907 | -2373 | -2393 | -2441 | -2455 | -2522 | -2693 | 67 | 0 | 0 | 1 |
| 16N 5E | 27 | SW NW SE | KETCHUM & WHAN | TRIMBLE #1 | -3752 | 918 | -2348 | -2372 | -2414 | -2424 | -2497 | -2669 | 73 | 0 | 0 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16N 5E | 27 | NE NE SE | O'ROURKE & SUNRAY | TRIMBLE #1 | -4385 | 934 | -2321 | -2339 | -2391 | -2403 | -2476 | -2647 | 73 | 0 | 0 | 1 |
| 16N 5E | 28 | SE SE NE | ROBERT C. BROWER | HEIZELMAN NO. 2 | -3680 | 897 | -2363 | -2387 | -2444 | -2449 | -2515 | -2692 | 66 | 0 | 0 | 1 |
| 16N 5E | 29 | SW SW NW | BLACKWELL OIL & GAS | HAUSERMAN #1 | -4426 | 1022 | -2458 | -2488 | -2515 | -2528 | -2618 | -2770 | 90 | 12 | 7 | 1 |
| 16N 5E | 29 | C N/2 NW | LANDERS & WALDMAN INC. | HOUSEMAN #1 | -3795 | 960 | -2442 | -2466 | -2520 | -2530 | -2600 | -2760 | 70 | 0 | 0 | 1 |
| 16N 5E | 29 | C NW NE | OKLA. PETR. MGMT. | VICKERS NO. 1 | -4425 | 916 | -2431 | -2454 | -2512 | -2528 | -2591 | -2749 | 63 | 0 | 0 | 1 |
| 16N 5E | 30 | NE NE NW | C.U. BAY | PENROD #1 | -3825 | 956 | -2477 | -2501 | -2550 | -2562 | -2640 | -2800 | 78 | 9 | 9 | 1 |
| 16N 5E | 30 | SW SW NW | DIRICKSON & LEWIS | PENROD #1 | -4580 | 937 | -2526 | -2542 | -2576 | -2589 | -2665 | -2826 | 76 | 36 | 36 | 2 |
| 16N 5E | 30 | NE NE NE | GLOBE OIL & REF. CO. | HALTER #1 | -3661 | 989 | -2466 | -2492 | -2541 | -2550 | -2611 | NP | 61 | 13 | 13 | 1 |
| 16N 5E | 30 | C NE SE NW | LAEL ENERGY | COFFEY NO. 1 | -4640 | 986 | -2483 | -2509 | -2563 | -2585 | -2637 | -2802 | 52 | 14 | 14 | 1 |
| 16N 5E | 30 | SW NE NE | OKLA. PETR. MGMT. | SHAW #5 | -3909 | 988 | -2479 | -2503 | -2555 | -2570 | -2642 | -2802 | 72 | 12 | 10 | 1 |
| 16N 5E | 31 | NE NE SW | JOYES & EVANS | HARDING HEIRS #1 | -3978 | 999 | -2480 | -2510 | -2547 | -2560 | -2640 | -2808 | 80 | 16 | 9 | 1 |
| 16N 5E | 31 | C SW NE | MEGA EXPL., INC. | RUSH #1 | -4465 | 1002 | -2488 | -2517 | -2565 | -2590 | -2649 | -2821 | 59 | 21 | 13 | 1 |
| 16N 5E | 31 | C SW NW | MEGA EXPL., INC. | PENROD #1 | -4431 | 970 | -2512 | -2539 | -2582 | -2595 | -2672 | -2830 | 77 | 0 | 0 | 1 |
| 16N 5E | 32 | C SW NE | BROOKS HALL OIL CORP. | VIOLET NO. 1 | -4296 | 917 | -2472 | -2483 | -2518 | -2532 | -2603 | -2762 | 71 | 0 | 0 | 1 |
| 16N 5E | 33 | NW NW SE | DAVON OIL CORP | SOUTHERS #1 | -3701 | 864 | -2406 | -2436 | -2476 | -2487 | -2547 | -2722 | 60 | 0 | 0 | 1 |
| 16N 5E | 33 | NW SE | E.S. ADKINS | SMOTHERS #1 | -4348 | 863 | -2405 | -2429 | -2469 | -2484 | -2547 | -2717 | 63 | 0 | 0 | 1 |
| 16N 5E | 33 | NW SW NE | MEGA EXPL., INC. | HENLEY #1 | -4388 | 862 | -2417 | -2446 | -2483 | -2511 | -2566 | -2725 | 55 | 0 | 0 | 1 |
| 16N 5E | 34 | C SW SE | ROCKWELL PETR. CORP. | BURGESS NO. 2 | -4283 | 899 | -2380 | -2404 | -2452 | -2462 | -2516 | -2696 | 54 | 0 | 0 | 1 |
| 16N 5E | 35 | SE SE SE | E.J. ATHENS | LOFFLAND #1 | -4104 | 896 | -2264 | -2288 | -2332 | -2345 | -2405 | -2577 | 60 | 8 | 8 | 1 |
| 16N 5E | 36 | SW SW SW | HUBBELL DRLG. CO. | SCHOOL LAND #1 | -4089 | 881 | -2253 | -2269 | -2320 | -2330 | -2396 | -2569 | 66 | 8 | 8 | 1 |
| 16N 5E | 36 | SW SE SW | HUBBELL DRLG. CO. | SCHOOL LAND #2 | -4274 | 916 | -2227 | -2239 | -2299 | -2312 | -2374 | -2545 | 62 | 0 | 0 | 1 |
| 16N 5E | 36 | NE NE | ROCKWELL PETR. CORP. | STATE SCHOOL LAND #4 | -4080 | 930 | -2197 | -2222 | -2256 | -2273 | -2330 | -2545 | 57 | 0 | 0 | 1 |
| 16N 6E | 1 | NE NE SW | WARREN BRADSHAW EXPL | LAUDERDALE #1 | -3443 | 976 | -1606 | -1624 | -1667 | -1685 | -1773 | -1964 | 88 | 24 | 20 | 1 |
| 16N 6E | 3 | SW SW NE | BIG BEND PETR. CO. | COOK #1 | -4037 | 959 | -1758 | -1776 | -1820 | -1839 | -1919 | -2081 | 80 | 14 | 14 | 1 |
| 16N 6E | 3 | SE SE NE | TOTO GAS | COOK NO. 1 | -3557 | 983 | -1717 | -1733 | -1777 | -1783 | -1875 | -2036 | 92 | 13 | 13 | 1 |
| 16N 6E | 4 | SE SE NE | C.P. QUINLAN | DUARD SCOTT #1 | -3450 | 950 | -1821 | -1840 | -1889 | -1903 | -1991 | -2146 | 88 | 28 | 28 | 1 |
| 16N 6E | 4 | NW NW NW | PALMER OIL CORP. | WAGNER #1 | -3764 | 915 | -1871 | -1894 | -1938 | -1952 | -2040 | -2196 | 88 | 24 | 24 | 1 |
| 16N 6E | 5 | SE NE NW | AMERADA PETR. CORP. | MCKEOWN #1 | -3846 | 916 | -1934 | -1962 | -2000 | -2023 | -2095 | -2255 | 72 | 0 | 0 | 0 |
| 16N 6E | 6 | SW SW NW | AURORA GASOLINE CO. | COOK #1 | -3459 | 890 | -2067 | -2083 | -2132 | -2148 | -2225 | -2387 | 76 | 0 | 0 | 0 |
| 16N 6E | 6 | SE SE SE | C.P. QUINLAN | COOK #1 | -3449 | 915 | -2006 | -2027 | -2073 | -2084 | -2160 | -2325 | 66 | 0 | 0 | 0 |
| 16N 6E | 7 | E/2 SE NE | RESOURCE DEVEL., INC. | WRIGHT #1-7 | -3946 | 904 | -2029 | -2048 | -2096 | -2111 | -2184 | -2353 | 73 | 5 | 5 | 0 |
| 16N 6E | 7 | NE SW SE | SCAT | VON DEYLEN #1 | -3501 | 903 | -2052 | -2072 | -2118 | -2137 | -2207 | -2378 | 70 | 5 | 5 | 0 |
| 16N 6E | 8 | SE SE NE | FOSTER DRLG. CO. | HANCOCK #1 | -3319 | 901 | -1944 | -1960 | -2008 | -2018 | -2097 | -2268 | 79 | 4 | 4 | 0 |
| 16N 6E | 9 | SW SE SE | R.L. KEMP & WHAN | CAVES #1 | -3633 | 1061 | -1895 | -1912 | -1958 | -1967 | -2048 | -2220 | 81 | 0 | 0 | 0 |
| 16N 6E | 10 | NW NW NW | BIG FOUR PETR. CO. | ALICE PICKARD #1 | -3492 | 992 | -1838 | -1857 | -1907 | -1919 | -1997 | -2159 | 78 | 0 | 0 | 0 |
| 16N 6E | 10 | C NW NW | RESOURCE DEVEL., INC. | TITUS #1-10 | -4023 | 979 | -1842 | -1863 | -1909 | -1936 | -2006 | -2163 | 70 | 0 | 0 | 1 |
| 16N 6E | 12 | NE NE SW | KETCHUM OIL CO. | LANGLEY #1-8 | -3351 | 908 | -1615 | -1634 | -1676 | -1690 | -1777 | -1967 | 87 | 22 | 18 | 1 |
| 16N 6E | 12 | SE SE SW | OWEN R. RIVES | LANGLEY #1 | -3360 | 893 | -1634 | -1652 | -1692 | -1707 | -1784 | -1979 | 87 | 0 | 0 | 1 |
| 16N 6E | 13 | NE SW SW | HUBBELL DRLG. CO. | WHEELAND #1 | -3572 | 956 | -1707 | -1726 | -1759 | -1767 | -1855 | -2054 | 88 | 17 | 17 | 1 |
| 16N 6E | 14 | NE NE SW | NADEL & GUSSMAN | TETERS #1 | -3209 | 933 | -1768 | -1786 | -1830 | -1845 | -1918 | -2096 | 73 | 0 | 0 | 0 |
| 16N 6E | 14 | C NW NE NW | ROBINOWITZ OIL CO. | TYNER NO. 4 | -3625 | 995 | -1734 | 3744 | -1795 | -1815 | -1890 | -2060 | 75 | 0 | 0 | 0 |
| 16N 6E | 16 | NW NW SW | A.P.A. INC. | MARASAL #1 | -3453 | 969 | -1972 | -1990 | -2036 | -2045 | -2130 | -2301 | 85 | 0 | 0 | 0 |
| 16N 6E | 16 | SE SE SW | FLEET - HUBBELL | STATE SCHOOL LAND #1 | -4024 | 1027 | -1943 | -1942 | -2003 | -2014 | -2095 | -2292 | 81 | 0 | 0 | 0 |
| 16N 6E | 18 | C NE NE | RESOURCE DEVEL., INC. | VICKERY #1-18 | -4000 | 923 | -2047 | -2066 | -2115 | -2137 | -2201 | -2372 | 64 | 0 | 0 | 0 |
| 16N 6E | 18 | NW SE | RESOURCE DEVEL., INC. | VICKERY #2-18 | -4113 | 978 | -2062 | -2081 | -2133 | -2162 | -2215 | -2392 | 63 | 9 | 9 | 0 |
| 16N 6E | 19 | C SE SE | RESOURCE DEVEL., INC. | TRAWICK #1-19 | -3887 | 980 | -2084 | -2113 | -2153 | -2180 | -2231 | -2403 | 51 | 0 | 0 | 0 |
| 16N 6E | 20 | SE NE SW | HARPER - TURNER CO. | HOMER #1 | -3551 | 1003 | -2058 | -2070 | -2106 | -2117 | -2182 | -2357 | 65 | 0 | 0 | 1 |
| 16N 6E | 21 | SE NW SW | SUNRAY DX OIL CO. | JACKS NO. 1 | -3478 | 988 | -2008 | -2018 | -2045 | -2052 | -2131 | -2302 | 79 | 0 | 0 | 0 |
| 16N 6E | 22 | NE NE NE | APACHE | REMINGTON #1-B | -3291 | 979 | -1827 | -1844 | -1883 | -1889 | -1970 | -2150 | 81 | 11 | 11 | 0 |
| 16N 6E | 22 | NE NE SE | NADEL & GUSSMAN | ENGLISH NO. 1 | -3403 | 987 | -1905 | -1926 | -1964 | -1972 | -2050 | -2229 | 78 | 0 | 0 | 0 |
| 16N 6E | 22 | SE SE NE | NADEL & GUSSMAN | REMINGTON #1 | -3879 | 977 | -1860 | -1882 | -1909 | -1919 | -2004 | -2185 | 85 | 0 | 0 | 0 |
| 16N 6E | 22 | NE NW NE | NADEL & GUSSMAN | REMINGTON #2 | -3838 | 998 | -1841 | -1858 | -1895 | -1903 | -1991 | -2165 | 88 | 0 | 0 | 0 |
| 16N 6E | 22 | C SW SE | RESOURCE DEVEL., INC. | REMINTON #1-22 | -3996 | 1020 | -1858 | -1890 | -1925 | -1939 | -2009 | -2190 | 70 | 4 | 4 | 0 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | 1/4S/4S | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16N 6E | 23 | SW SW SE | OLD YORK DRLG. CO., INC. | PREWITT NO. 1 | -3482 | 1020 | -1845 | -1859 | -1880 | -1899 | -1965 | -2155 | 66 | 6 | 6 | 0 |
| 16N 6E | 23 | C NE SW SW | RESOURCE DEVEL., INC. | JARVIS #1-23 | -3703 | 990 | -1859 | -1871 | -1885 | -1910 | -1981 | -2162 | 71 | 0 | 0 | 0 |
| 16N 6E | 23 | SE SW SW | RESOURCE DEVEL., INC. | JARVIS #2-23 | -3745 | 988 | -1853 | -1879 | -2907 | -1917 | -1994 | -2170 | 77 | 0 | 0 | 0 |
| 16N 6E | 25 | SW SW NW | C.W. SMITH & ASSOCIATES | STECKLER #1 | -3795 | 929 | -1820 | -1835 | -1848 | -1870 | -1945 | -2176 | 75 | 0 | 0 | 0 |
| 16N 6E | 26 | C NW SW | RESOURCE DEVEL., INC. | KINNAMON #1-26 | -3806 | 924 | -1919 | -1936 | -1949 | -1961 | -2042 | -2256 | 81 | 0 | 0 | 0 |
| 16N 6E | 27 | NE NE NW | AUROROA GASOLINE CO | #1 CONGER | -3365 | 945 | -1944 | -1959 | -1979 | -1982 | -2062 | -2241 | 70 | 0 | 0 | 0 |
| 16N 6E | 27 | NW SW | MCGRIFF EXPL. | ETHRIDGE NO. 1-27 | -3789 | 909 | -1980 | -1992 | -2003 | -2013 | -2091 | -2270 | 78 | 0 | 0 | 0 |
| 16N 6E | 27 | SW NW SE | RESOURCE DEVEL., INC. | KINNAMON NO. 1-27 | -3954 | 954 | -1940 | -1951 | -1968 | -1994 | -2043 | -2237 | 49 | 0 | 0 | 0 |
| 16N 6E | 27 | SW SW SE | RESOURCE DEVEL., INC. | KINNAMON NO. 2-27 | -3894 | 954 | -1917 | -1929 | -1941 | -1951 | -2027 | -2205 | 76 | 0 | 0 | 0 |
| 16N 6E | 27 | SW SW NE | THE WIL-MC OIL CORP. | REMINGTON #2 | -3790 | 945 | -1934 | -1953 | -1973 | -1998 | -2065 | -2241 | 67 | 0 | 0 | 0 |
| 16N 6E | 28 | NW NW SE | L.B. JACKSON CO. | THOMAS MORRIS #1 | -4079 | 969 | -2007 | -2020 | -2035 | -2046 | -2130 | -2321 | 84 | 0 | 0 | 0 |
| 16N 6E | 28 | NW NW SE | MCGRIFF EXPL. | MORRIS NO. 1-28 | -3880 | 965 | -2013 | -2026 | -2040 | -2050 | -2135 | -2308 | 85 | 0 | 0 | 0 |
| 16N 6E | 28 | C NE SW | RESOURCE DEVEL., INC. | SILL #1-28 | -3787 | 951 | -2020 | -2054 | -2074 | -2099 | -2158 | -2338 | 59 | 0 | 0 | 0 |
| 16N 6E | 28 | SW NW NE | THE WIL-MC OIL CORP. | HEIRS OF MARY LOGAN #2 | -3282 | 817 | -1978 | -2003 | -2028 | -2042 | -2120 | -2294 | 78 | 0 | 0 | 0 |
| 16N 6E | 29 | C SW NW | RESOURCE DEVEL., INC. | RAFFERTY NO. 1-29 | -3495 | 1000 | -2074 | -2105 | -2138 | -2160 | -2212 | -2392 | 52 | 0 | 0 | 0 |
| 16N 6E | 30 | C SW NW | RESOURCE DEVEL., INC. | ROBERTSON NO. 1-30 | -4242 | 981 | -2175 | -2182 | -2218 | -2222 | -2290 | -2472 | 68 | 0 | 0 | 1 |
| 16N 6E | 31 | NE NE NW | HERNDON DRLG. CO. | TERRY #1 | -4214 | 977 | -2141 | -2151 | -2175 | -2183 | -2265 | -2442 | 82 | 3 | 3 | 0 |
| 16N 6E | 31 | NE NW SW | ILLINOIS EXPL. | TERRY #1 | -4080 | 953 | -2166 | -2178 | -2208 | -2218 | -2289 | -2469 | 71 | 13 | 8 | 0 |
| 16N 6E | 32 | SW SW SW | ELBAR OIL CO. ET AL | BLACK #1 | -4050 | 977 | -2140 | -2154 | -2165 | -2177 | -2258 | -2433 | 81 | 0 | 0 | 0 |
| 16N 6E | 32 | NW SW NE | FALCON - SEABOARD | ARNOLD #1 | -4017 | 1026 | -2086 | -2098 | -2118 | -2130 | -2207 | -2379 | 77 | 0 | 0 | 0 |
| 16N 6E | 32 | SE 6E NE | G. KENNETH HARRIS | ARNOLD #1 | -4203 | 983 | -2067 | -2079 | -2096 | -2108 | -2178 | -2360 | 70 | 0 | 0 | 0 |
| 16N 6E | 32 | SE NE NW | SERVICE DRLG. CO. | BLACK #1 | -4005 | 1009 | -2091 | -2104 | -2121 | -2130 | -2211 | -2384 | 81 | 0 | 0 | 0 |
| 16N 6E | 32 | NW SE NW | SERVICE DRLG. CO. | BLACK #2 | -4309 | 1052 | -2107 | -2118 | -2139 | -2148 | -2224 | -2397 | 76 | 0 | 0 | 1 |
| 16N 6E | 32 | SE SW | SERVICE DRLG. CO. | BLACK #4-32 | -4280 | 1015 | -2101 | -2114 | -2132 | -2156 | -2207 | -2387 | 51 | 0 | 0 | 0 |
| 16N 6E | 32 | SW SW | SERVICE DRLG. CO. | EDNA 1-32 | -4151 | 1018 | -2131 | -2145 | -2164 | -2189 | -2240 | -2472 | 51 | 0 | 0 | 0 |
| 16N 6E | 33 | SW NW | F.C.D. OIL CORP. | GENTRY NO. 1 | -4196 | 985 | -2062 | -2076 | -2105 | -2112 | -2174 | -2320 | 62 | 0 | 0 | 0 |
| 16N 6E | 33 | NE NE SW | RESOURCE DEVEL., INC. | THURSTON-ROLLMAN #1-33 | -3952 | 965 | -2047 | -2060 | -2075 | -2092 | -2154 | -2347 | 62 | 0 | 0 | 0 |
| 16N 6E | 34 | NE NE SW | MID CONTINENT PETR. | SMITH #1 | -3856 | 946 | -1955 | -1967 | -1981 | -1991 | -2074 | -2254 | 63 | 0 | 0 | 0 |
| 16N 6E | 34 | C SW NE | RESOURCE DEVEL., INC. | KINNAMON #2-34 | -3749 | 887 | -1934 | -1953 | -1967 | -1988 | -2053 | -2226 | 65 | 0 | 0 | 0 |
| 16N 6E | 34 | C SW SE | RESOURCE DEVEL., INC. | QUANDEL #2-34 | -3809 | 930 | -1870 | -1884 | -1999 | -2017 | -2080 | -2265 | 63 | 0 | 0 | 0 |
| 16N 6E | 34 | C SE NW | RESOURCE DEVEL., INC. | FORD #1-34 | -3753 | 901 | -1974 | -1989 | -2007 | -2025 | -2089 | -2297 | 64 | 0 | 0 | 0 |
| 16N 6E | 34 | C NW NW | RESOURCE DEVEL., INC. | FORD #2-34 | -3809 | 947 | -1978 | -1989 | -2015 | -2015 | -2086 | -2269 | 71 | 61 | 53 | 0 |
| 16N 6E | 34 | C SE NE | RESOURCE DEVEL., INC. | KINNAMON #1-34 | -3610 | 899 | -1933 | -1955 | -1968 | -1986 | -2034 | -2227 | 48 | 0 | 0 | 0 |
| 16N 6E | 34 | SE NE SW | RESOURCE DEVEL., INC. | SCHAD #1-34 | -3700 | 939 | -1974 | -1986 | -2000 | -2020 | -2075 | -2268 | 55 | 26 | 26 | 0 |
| 16N 6E | 35 | NW NE SW | ATTEBERRY ENGINEERING | BORWIG #1-35A | -3907 | 890 | -1910 | -1922 | -1933 | -1958 | -2009 | -2210 | 51 | 0 | 0 | 0 |
| 16N 6E | 35 | N/2 SW SW | ATTEBERRY ENGINEERING | BAKER #1-35 | -3928 | 952 | -1955 | -1963 | -1978 | -1988 | -2058 | -2248 | 70 | 0 | 0 | 0 |
| 16N 6E | 35 | SE NW SE | PAUL R. PRENTICE | BURKHART #1 | -3287 | 924 | -1903 | -1916 | -1919 | -1938 | -2010 | -2187 | 72 | 0 | 0 | 0 |
| 16N 6E | 35 | C NW NW | RESOURCE DEVEL., INC. | KINNAMON #2-35 | -3940 | 896 | -1900 | -1918 | -1930 | -1950 | -2011 | -2190 | 61 | 0 | 0 | 0 |
| 17N 4E | 1 | SW SW SW | FOSTER DRLG. CO. | BAGLEY #1 | -4228 | 862 | -2295 | -2326 | -2376 | -2388 | -2497 | -2650 | 109 | 74 | 74 | 2 |
| 17N 4E | 1 | NW NW SW | PALACE EXPL. | BAGLEY NO. 1-1 | -4198 | 940 | -2269 | -2293 | -2318 | -2325 | -2455 | -2513 | 130 | 17 | 12 | 2 |
| 17N 4E | 2 | C SW NE | BLACKWELL OIL & GAS | GOLDSBY #1 | -4243 | 912 | -2317 | -2353 | -2401 | -2415 | -2520 | -2661 | 105 | 46 | 41 | 2 |
| 17N 4E | 2 | SW SW 6E | FOSTER DRLG. CO. | GOLDIE NO. 1 | -4208 | 897 | -2308 | -2342 | -2373 | -2413 | -2490 | -2644 | 77 | 38 | 38 | 1 |
| 17N 4E | 2 | NW 6E SE | FOSTER DRLG. CO. | GOLDIE NO. 2 | -4230 | 903 | -2297 | -2330 | -2375 | -2393 | -2496 | -2647 | 102 | 50 | 50 | 1 |
| 17N 4E | 4 | SE SW SE | W. H. MARTGAN | ROBINSON #1 | -4341 | 915 | -2446 | -2491 | -2544 | -2562 | -2624 | -2774 | 62 | 0 | 0 | 1 |
| 17N 4E | 5 | NE SE NE | FULLERTON OIL CO. | PAYNE #1 | -4180 | 897 | -2366 | -2417 | -2472 | -2486 | -2544 | -2692 | 58 | 0 | 0 | 1 |
| 17N 4E | 5 | SE NW NW | GLIMP OIL CO. | TARVER #1 | -4231 | 943 | -2341 | -2387 | -2439 | -2450 | -2505 | -2646 | 55 | 0 | 0 | 1 |
| 17N 4E | 5 | C N/2 NW NW | KETAL OIL PRODUCING CO. | TARVER #2 | -4110 | 953 | -2331 | -2384 | -2428 | -2440 | -2499 | -2638 | 59 | 7 | 7 | 1 |
| 17N 4E | 7 | SW NW SW | GULF OIL CORP. | L. MOLLOY #1 | -4478 | 909 | -2577 | -2630 | -2684 | -2695 | -2760 | -2905 | 65 | 0 | 0 | 0 |
| 17N 4E | 8 | C NE NE | POST OAK OIL CO. | GIBBLE #1-8 | -4119 | 845 | -2473 | -2515 | -2562 | -2575 | -2645 | -2795 | 70 | 0 | 0 | 1 |
| 17N 4E | 9 | NW NE SE | WARREN OIL CO. | LEWIS #1 | -4386 | 966 | -2436 | -2477 | -2530 | -2546 | -2614 | -2762 | 68 | 0 | 0 | 1 |
| 17N 4E | 10 | NW NW SW | PORTABLE DRLG. CO. | A.T. BENNETT #1 | -3946 | 967 | -2431 | -2472 | -2529 | -2541 | -2596 | -2753 | 55 | 0 | 0 | 1 |
| 17N 4E | 10 | SE SE SW | THE TEXAS CO. | SILKWOOD #1 | -4204 | 934 | -2438 | -2474 | -2531 | -2545 | -2605 | -2766 | 60 | 0 | 0 | 1 |
| 17N 4E | 11 | NE NE NW | FOSTER DRLG. CO. | GLADYS NO. 1 | -4156 | 876 | -2326 | -2364 | -2416 | -2428 | -2509 | -2670 | 81 | 36 | 36 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17N 4E | 11 | NW NW NW | FOSTER DRLG. CO. | INA NO. 1 | -4070 | 869 | -2357 | -2397 | -2452 | -2463 | -2542 | -2699 | 78 | 28 | 28 | 1 |
| 17N 4E | 11 | SW SW SE | SKELLY OIL CO. | LATHROP #1 | -4269 | 926 | -2344 | -2374 | -2425 | -2444 | -2525 | -2677 | 81 | 37 | 37 | 1 |
| 17N 4E | 12 | W/2 SW NW | BIG FOUR PETR. CO. | JOY NEAL #1 | -4211 | 907 | -2306 | -2342 | -2396 | -2402 | -2514 | -2678 | 112 | 63 | 63 | 2 |
| 17N 4E | 15 | SW SW NE | CALLERY & HURT & WOLFE | HOGREFE #1 | -4379 | 929 | -2431 | -2480 | -2521 | -2537 | -2599 | -2756 | 62 | 0 | 0 | 1 |
| 17N 4E | 18 | SE SE NE | ATLANTIC REFINING CO. | H.F. JAUCH #2 | -4399 | 886 | -2542 | -2584 | -2644 | -2655 | -2718 | -2858 | 63 | 0 | 0 | 1 |
| 17N 4E | 18 | SE SW NE | NONDORF OIL AND GAS, INC. | STRUBLE NO. 1-18 | -4490 | 939 | -2562 | -2604 | -2663 | -2675 | -2736 | -2880 | 61 | 0 | 0 | 0 |
| 17N 4E | 18 | NW NW NW | TROUP-MOORE | KIRK #1 | -4000 | 964 | -2598 | -2645 | -2702 | -2716 | -2782 | -2928 | 66 | 0 | 0 | 1 |
| 17N 4E | 23 | NW NW SE | STATEX PETR. INC. | OLLIE NO. 1-23 | -4276 | 929 | -2380 | -2408 | -2464 | -2474 | -2562 | -2716 | 88 | 27 | 18 | 1 |
| 17N 4E | 25 | NE NE SW | HEFNER CO. & MOHAWK DRLG. CO. | THOMPSON #1 | -3801 | 970 | -2339 | -2369 | -2426 | -2443 | -2530 | -2675 | 87 | 53 | 33 | 1 |
| 17N 4E | 26 | SE SE SE | HEFNER CO. & R.L. KEMP | BAIR #1 | -4356 | 962 | -2397 | -2430 | -2484 | -2511 | -2584 | -2732 | 73 | 4 | 4 | 1 |
| 17N 4E | 26 | SW SW NE | MURPHY OIL CO. | BUNNEY #1 | -3864 | 968 | -2404 | -2433 | -2491 | -2506 | -2593 | -2738 | 87 | 37 | 37 | 1 |
| 17N 4E | 26 | NW NW NW | MURPHY OIL CO. | BAIR #1 | -4352 | 937 | -2411 | -2438 | -2493 | -2508 | -2593 | -2738 | 85 | 45 | 45 | 1 |
| 17N 4E | 28 | NW NE SW | FORDEE-RHOADES OIL CO. | COLON #1-A | -4363 | 941 | -2480 | -2509 | -2571 | -2588 | -2647 | -2801 | 59 | 0 | 0 | 1 |
| 17N 4E | 28 | SW SW SE | T.N. BERRY & CO. | HARDESTY #1 | -4435 | 992 | -2466 | -2493 | -2554 | -2573 | -2634 | -2782 | 61 | 0 | 0 | 1 |
| 17N 4E | 35 | SE SE SE | M & M DRLG. CORP. | JOHNSTON #1 | -4097 | 1009 | -2443 | -2479 | -2536 | -2556 | -2621 | -2771 | 65 | 0 | 0 | 1 |
| 17N 5E | 1 | NE NE SW | THOMPSON & TYE DRLG. CO. | HUGHES NO. 1 | -3935 | 900 | -2003 | -2037 | -2088 | -2090 | -2184 | -2346 | 94 | 0 | 0 | 1 |
| 17N 5E | 4 | NW NW SW | MAYES, TAYLOR & WHITE | DALLUEGE #1-A | -3647 | 1009 | -2154 | -2177 | -2228 | -2239 | -2320 | -2479 | 81 | 0 | 0 | 1 |
| 17N 5E | 5 | NE SE SE | THOMPSON & HARRIS BASSET-SIMON | TAYLOR COMMUNITY #1 | -3724 | 1071 | -2162 | -2186 | -2241 | -2252 | -2329 | -2489 | 77 | 30 | 24 | 1 |
| 17N 5E | 5 | SW SW NE | W.A. DELANEY, JR. | NIMS #3 | -3695 | 1025 | -2185 | -2211 | -2264 | -2274 | -2347 | -2514 | 73 | 8 | 8 | 1 |
| 17N 5E | 6 | SE NW NW | ILLINOIS EXPL. CO. | FURRY #1 | -3607 | 877 | -2218 | -2247 | -2299 | -2309 | -2412 | -2569 | 103 | 58 | 36 | 1 |
| 17N 5E | 6 | NW NW NE | W.H. RIDDLE & OTHERS | J. GIBSON KING #1 | -3641 | 907 | -2217 | -2243 | -2298 | -2304 | -2408 | -2568 | 105 | 55 | 55 | 1 |
| 17N 5E | 8 | NE NE NE | W.E. ANDERSON | LANG #1 | -3888 | 1065 | -2181 | -2204 | -2256 | -2268 | -2351 | -2510 | 83 | 14 | 14 | 1 |
| 17N 5E | 9 | NE NW SE | WILCO RESOURCES, INC. | BUSS NO. 1-9 | -3661 | 956 | -2137 | -2164 | -2214 | -2226 | -2316 | -2474 | 90 | 14 | 14 | 0 |
| 17N 5E | 10 | SE SE NW | CRITES & TAYLOR | STORMS #1 | -3609 | 894 | -2156 | -2187 | -2243 | -2256 | -2355 | -2526 | 99 | 32 | 32 | 0 |
| 17N 5E | 11 | NW NW SE | BLACKWELL OIL & GAS CO. | MORGAN #1 | -3500 | 853 | -2098 | -2133 | -2183 | -2197 | -2286 | -2447 | 89 | 27 | 13 | 1 |
| 17N 5E | 12 | NW SW SW | JOHNSON OIL & REFINING CO. | SHINN NO. 3 | -3461 | 852 | -2043 | -2084 | -2122 | -2138 | -2228 | -2388 | 90 | 26 | 18 | 1 |
| 17N 5E | 12 | SW NE SW | JOHNSON OIL & REFINING CO. | SHINN NO. 2 | -3528 | 881 | -2042 | -2088 | -2124 | -2138 | -2234 | -2393 | 96 | 15 | 13 | 1 |
| 17N 5E | 12 | SE SW SW | JOHNSON OIL & REFINING CO. | SHINN NO. 1 | -3428 | 853 | -2036 | -2076 | -2121 | -2137 | -2228 | -2388 | 91 | 20 | 16 | 1 |
| 17N 5E | 13 | NW NW SE | JOHNSON OIL & REFINING CO. | GRIFFETH NO. 1 | -3602 | 853 | -2056 | -2098 | -2139 | -2151 | -2250 | -2419 | 99 | 14 | 14 | 1 |
| 17N 5E | 13 | NW NW NW | MIDCO OIL CO. | TESTERMAN #1 | -3463 | 835 | -2038 | -2079 | -2126 | -2139 | -2233 | -2387 | 94 | 18 | 12 | 1 |
| 17N 5E | 13 | SE SW SW | MIDCO OIL CO. | DOOLEY #2 | -3471 | 868 | -2052 | -2097 | -2147 | -2161 | -2254 | -2416 | 93 | 16 | 12 | 1 |
| 17N 5E | 13 | NE NW NW | MIDCO OIL CO. | TESTERMAN #2 | -3429 | 848 | -2038 | -2081 | -2122 | -2133 | -2231 | -2392 | 98 | 32 | 20 | 1 |
| 17N 5E | 13 | NW SW NW | MIDCO OIL CO. | JESKE #1 | -3478 | 852 | -2048 | -2087 | -2130 | -2142 | -2238 | -2393 | 96 | 20 | 14 | 1 |
| 17N 5E | 14 | SE NE SE | H.E.R. DRLG. CO. | ROY LADD #1 | -3508 | 886 | -2074 | -2119 | -2164 | -2175 | -2274 | -2434 | 99 | 17 | 7 | 1 |
| 17N 5E | 14 | SE SE NE | MIDCO OIL CO. | WILSON #1 | -3474 | 867 | -2061 | -2107 | -2150 | -2163 | -2250 | -2408 | 87 | 4 | 2 | 1 |
| 17N 5E | 17 | SW SW SW | D & L OIL CO. | FILLMORE #1 | -3723 | 1028 | -2212 | -2241 | -2292 | -2305 | -2382 | -2540 | 77 | 8 | 8 | 1 |
| 17N 5E | 17 | SE SE SE | D & L OIL CO. | BOETTLER NO. 1 | -4108 | 924 | -2186 | -2217 | -2265 | -2279 | -2359 | -2516 | 80 | 6 | 6 | 1 |
| 17N 5E | 17 | NW NE NW | PALMER OIL CORP. | CALDWELL #1 | -4253 | 1049 | -2215 | -2244 | -2297 | -2310 | -2393 | -2551 | 83 | 15 | 15 | 1 |
| 17N 5E | 18 | SW SW NW | CLARK C. NYE & J. MARSHALL NYE | DALLUEGE #1 | -3945 | 996 | -2312 | -2340 | -2376 | -2408 | -2481 | -2644 | 75 | 0 | 0 | 1 |
| 17N 5E | 18 | SE SE SE | DIRICKSON & LEWIS DRLG. CO. | GROTHER #1 | -3735 | 1037 | -2232 | -2261 | -2313 | -2325 | -2408 | -2563 | 83 | 14 | 6 | 1 |
| 17N 5E | 19 | SE NW NW | MOHAWK DRLG. CO. | STUMP #1 | -4350 | 1021 | -2319 | -2349 | -2401 | -2415 | -2488 | -2650 | 73 | 0 | 0 | 1 |
| 17N 5E | 19 | SE SE NE | T. BLAKE DIRICKSON & MORA DRLG. | ELDRIDGE #1 | -3951 | 1051 | -2247 | -2283 | -2333 | -2346 | -2423 | -2582 | 77 | 0 | 0 | 1 |
| 17N 5E | 21 | NE NW NE | FRONTIER ENERGY EXPL. | MURPHY #1 | -4034 | 904 | -2153 | -2189 | -2234 | -2244 | -2332 | -2484 | 88 | 2 | 2 | 1 |
| 17N 5E | 21 | NE NE SE | R.L. KEMP | DUNGAN NO. 1 | -3537 | 863 | -2147 | -2186 | -2243 | -2259 | -2339 | -2512 | 80 | 0 | 0 | 1 |
| 17N 5E | 21 | SW SE NW | STERLING OIL OF OKLA. | LOHAUS #1 | -4090 | 932 | -2161 | -2196 | -2246 | -2265 | -2334 | -2490 | 69 | 0 | 0 | 1 |
| 17N 5E | 21 | SW NW SE | THOMPSON DRLG. CO. | DUNGEN #1 | -3552 | 889 | -2169 | -2211 | -2257 | -2271 | -2350 | -2506 | 79 | 0 | 0 | 1 |
| 17N 5E | 22 | SE SE SE | FOSTER DRLG. CO. ET AL. | DUNGAN #1 | -3531 | 885 | -2138 | -2172 | -2234 | -2246 | -2326 | -2486 | 80 | 0 | 0 | 1 |
| 17N 5E | 23 | NE NE NE | JAGUAR ENERGY DEVEL., INC. | LADD #1 | -4054 | 901 | -2070 | -2118 | -2169 | -2180 | -2274 | -2438 | 94 | 34 | 13 | 1 |
| 17N 5E | 23 | NE SE SE | JOHNSON OIL & REFINING CO. | JOHNSTON NO. 2 | -3483 | 883 | -2076 | -2133 | -2172 | -2186 | -2276 | -2434 | 80 | 20 | 20 | 1 |
| 17N 5E | 24 | NE SW NW | JOHNSON OIL & REFINING CO. | LEWIS NO. 3 | -3464 | 881 | -2050 | -2098 | -2141 | -2145 | -2246 | -2404 | 101 | 22 | 16 | 1 |
| 17N 5E | 24 | SE NE NW | JOHNSON OIL & REFINING CO. | LEWIS NO. 7 | -3469 | 879 | -2037 | -2082 | -2131 | -2143 | -2245 | -2390 | 102 | 24 | 20 | 1 |
| 17N 5E | 24 | SE SE NW | JOHNSON OIL & REFINING CO. | LEWIS TANK FARM #11 | -3459 | 863 | -2027 | -2077 | -2120 | -2133 | -2232 | -2386 | 99 | 47 | 28 | 1 |
| 17N 5E | 24 | SW SW NW | JOHNSON OIL & REFINING CO. | LEWIS NO. 6 | -3453 | 881 | -2070 | -2112 | -2157 | -2168 | -2262 | -2420 | 94 | 22 | 18 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17N 5E | 25 | SE SE NE | A. O. OLSON | HASKINS #1 | -3928 | 873 | -2016 | -2065 | -2107 | -2125 | -2188 | -2359 | 73 | 0 | 0 | 1 |
| 17N 5E | 25 | NE SE SE | FOSTER DRLG. CO. | DETHLOFF NO. 5 | -3390 | 862 | -2016 | -2055 | -2100 | -2114 | -2188 | -2358 | 84 | 0 | 0 | 1 |
| 17N 5E | 25 | SE NE NW | JOHNSON OIL & REFINING CO. | DOOLEY NO. 4 | -3387 | 823 | -2026 | -2067 | -2116 | -2131 | -2220 | -2377 | 89 | 12 | 8 | 1 |
| 17N 5E | 25 | SE SE NW | JOHNSON OIL & REFINING CO. | DOOLEY NO. 1 | -3390 | 830 | -2042 | -2088 | -2130 | -2142 | -2232 | -2388 | 90 | 5 | 5 | 1 |
| 17N 5E | 25 | SW NE NE | MAVERICK OIL CO. | HASKINS #1 | -3416 | 832 | -2009 | -2059 | -2105 | -2116 | -2207 | -2368 | 91 | 23 | 19 | 1 |
| 17N 5E | 25 | SW SW SE | OLSON OL CO. | DEACON NO. 2 | -3524 | 870 | -2055 | -2093 | -2139 | -2150 | -2234 | -2385 | 84 | 6 | 4 | 1 |
| 17N 5E | 26 | NE NE NE | FOSTER DRLG. CO. | DEACON #1 | -3424 | 881 | -2049 | -2092 | -2127 | -2154 | -2240 | -2397 | 86 | 18 | 15 | 1 |
| 17N 5E | 26 | SE SE NW | FOSTER DRLG. CO. ET AL | CARTER #1 | -4026 | 858 | -2111 | -2152 | -2202 | -2216 | -2299 | -2458 | 83 | 4 | 2 | 1 |
| 17N 5E | 27 | SE NE SE | FLYNN OIL CO. | HEMMER EST. #1 | -3500 | 883 | -2125 | -2166 | -2217 | -2232 | -2307 | -2465 | 75 | 0 | 0 | 1 |
| 17N 5E | 27 | SW SW SE | FOSTER DRLG. CO. | CROKA #1 | -3475 | 856 | -2131 | -2176 | -2224 | -2241 | -2311 | -2467 | 70 | 2 | 2 | 1 |
| 17N 5E | 27 | NW NW SW | FOSTER DRLG. CO. | KENDALL TRUST #1 | -3491 | 882 | -2140 | -2186 | -2234 | -2250 | -2324 | -2476 | 74 | 0 | 0 | 1 |
| 17N 5E | 28 | SE NW | FOUR STATES OIL & GAS CO. | HALL #1 | -3997 | 914 | -2155 | -2205 | -2245 | -2265 | -2331 | -2486 | 66 | 6 | 6 | 1 |
| 17N 5E | 28 | SW NW SE | T.N. BERRY & CO. | TANNER NO. 1 | -3983 | 886 | -2160 | -2197 | -2252 | -2266 | -2338 | -2494 | 72 | 0 | 0 | 1 |
| 17N 5E | 28 | SE SE SW | WALMAR OIL CO. | MCLAURY #1 | -3994 | 869 | -2131 | -2172 | -2228 | -2247 | -2313 | -2475 | 66 | 0 | 0 | 1 |
| 17N 5E | 29 | SW NW NW | ARTHUR DAVIDOR | MCLARY #1 | -4233 | 994 | -2248 | -2286 | -2338 | -2348 | -2420 | -2576 | 72 | 6 | 6 | 1 |
| 17N 5E | 30 | NW NE NW | MOHAWK DRLG. CO. | SAYERS #1 | -4281 | 1029 | -2294 | -2327 | -2380 | -2392 | -2465 | -2615 | 73 | 0 | 0 | 1 |
| 17N 5E | 30 | SE NW NW | SEIGEL PETR. | RODGERS NO. 1 | -4250 | 1018 | -2299 | -2334 | -2386 | -2399 | -2471 | -2625 | 72 | 0 | 0 | 1 |
| 17N 5E | 31 | SW SE SW | GRAYBOL OIL CORP. | CONNELL #1 | -4416 | 1064 | -2232 | -2280 | -2330 | -2344 | -2418 | -2564 | 74 | 0 | 0 | 1 |
| 17N 5E | 31 | C SE SE NW | SILVER FOX DRLG & LESTER E. COX | PRUITT NO. 1 | -3776 | 1032 | -2260 | -2297 | -2356 | -2373 | -2447 | -2598 | 74 | 8 | 8 | 1 |
| 17N 5E | 32 | NW NE SE | L.B. JACKSON & R. L. KEMP | SMITH #1 | -3588 | 891 | -2209 | -2254 | -2303 | -2321 | -2387 | -2543 | 66 | 0 | 0 | 1 |
| 17N 5E | 32 | NW NE | MORGAN OIL CO. | BONEBREAK #1 | -4090 | 917 | -2212 | -2251 | -2305 | -2322 | -2389 | -2557 | 67 | 0 | 0 | 1 |
| 17N 5E | 33 | SE NE NE | DAVON OIL CO. | MCLAURY #1 | -3492 | 862 | -2158 | -2202 | -2249 | -2265 | -2335 | -2494 | 70 | 14 | 10 | 1 |
| 17N 5E | 33 | C NW NW | HELMERICH & PAYNE | LILLIE BONEBRAKE #1 | -3624 | 868 | -2171 | -2213 | -2267 | -2286 | -2352 | -2510 | 66 | 2 | 2 | 1 |
| 17N 6E | 2 | SE NE NE | JAGUAR ENERGY DEVEL., INC. | LEVINSON #1 | -3390 | 867 | -1545 | -1583 | -1622 | -1630 | -1721 | -1900 | 91 | 6 | 6 | 0 |
| 17N 6E | 3 | SW SW NW | O.F. WARREN | ANDERSON #1 | -3650 | 856 | -1798 | -1840 | -1880 | -1890 | -1994 | -2144 | 104 | 36 | 28 | 1 |
| 17N 6E | 3 | SE NW SE | PHILLIPS PETR. CO. | SORRELS #1 | -3570 | 880 | -1719 | -1770 | -1802 | -1815 | -1911 | -2066 | 96 | 10 | 4 | 1 |
| 17N 6E | 5 | C NW NE | TEXACO | CHARLIE GRANT #1 | -3544 | 788 | -1875 | -1917 | -1960 | -1969 | -2062 | -2221 | 93 | 10 | 6 | 0 |
| 17N 6E | 5 | SE SE NE | THOMPSON & KEMP | GRANT #1 | -3228 | 790 | -1854 | -1893 | -1937 | -1948 | -2045 | -2192 | 97 | 7 | 7 | 1 |
| 17N 6E | 6 | SW NE NE | SOPAC EXPL. INC. | LEDGERWOOD #1 | -3171 | 801 | -1949 | -1984 | -2029 | -2037 | -2130 | -2289 | 93 | 14 | 14 | 0 |
| 17N 6E | 7 | SE SE SW | FOSTER DRLG. CO. | GRIFFITH #1 | -3361 | 837 | -1973 | -2016 | -2057 | -2069 | -2173 | -2292 | 104 | 38 | 22 | 1 |
| 17N 6E | 8 | SW SE | C.L. CARLOCK | COLLINS #1 | -3220 | 808 | -1871 | -1924 | -1966 | -1978 | -2078 | -2238 | 100 | 30 | 10 | 1 |
| 17N 6E | 8 | SE SE NE | R.E. DIRICKSON & ASSOCIATES | GIBBS#1 | -3408 | 837 | -1873 | -1911 | -1951 | -1963 | -2058 | -2223 | 95 | 13 | 7 | 1 |
| 17N 6E | 9 | C NE | BARUCH & FOSTER | SADIE TYNER NO. 1 | -3685 | 857 | -1829 | -1868 | -1905 | -1921 | -2015 | -2174 | 94 | 0 | 0 | 0 |
| 17N 6E | 10 | NE SE SE | BLACKWELL OIL & GAS CO. | PATTERSON #1 | -3197 | 952 | -1727 | -1774 | -1821 | -1829 | -1931 | -2088 | 102 | 23 | 12 | 1 |
| 17N 6E | 14 | NW NE SW | BWB OPERATING, INC. | PETERMAN NO. 1 | -2806 | 929 | -1578 | -1633 | -1671 | -1676 | -1795 | NP | 119 | 36 | 16 | 0 |
| 17N 6E | 14 | NW SW SW | EASON OIL CO. | SAMPSON CARTER #1 | -2905 | 923 | -1615 | -1661 | -1696 | -1706 | -1816 | -1969 | 110 | 10 | 10 | 1 |
| 17N 6E | 15 | SE SE SW | EASON OIL CO. | COOK #1 | -2913 | 897 | -1640 | -1692 | -1729 | -1740 | -1846 | -1998 | 106 | 2 | 2 | 1 |
| 17N 6E | 15 | NW NW SW | FLYNN OIL CO. | COOK #1 | -3557 | 866 | -1737 | -1779 | -1819 | -1832 | -1932 | -2086 | 100 | 4 | 2 | 1 |
| 17N 6E | 15 | NW NW SE | W. C. MCBRIDE, INC. | L. DUNCAN HEIRS #4 | -2980 | 914 | -1695 | -1736 | -1782 | -1795 | -1889 | -2046 | 94 | 8 | 4 | 1 |
| 17N 6E | 15 | NW SE SE | W. C. MCBRIDE, INC. | L. DUNCAN HEIRS #5 | -2909 | 902 | -1634 | -1694 | -1731 | -1740 | -1850 | -2003 | 110 | 0 | 0 | 1 |
| 17N 6E | 16 | SW SE | BARRUCH & FOSTER | STATE LAND #1 | -3500 | 835 | -1827 | -1855 | -1899 | -1905 | -2008 | -2175 | 103 | 9 | 9 | 1 |
| 17N 6E | 17 | C NW NW | MCGRIFF EXPL. | CORA NO. 1-17 | -3815 | 943 | -2044 | -2062 | -2096 | -2106 | -2222 | -2358 | 116 | 7 | 7 | 0 |
| 17N 6E | 18 | SE SW SW | R.C. JONES & CO., INC. | GRIFFITH #1 | -3461 | 850 | -2006 | -2050 | -2091 | -2102 | -2200 | -2355 | 98 | 16 | 6 | 1 |
| 17N 6E | 19 | SW SW SW | COMAIL OIL CO. | HASKINS #1 | -3375 | 815 | -2008 | -2044 | -2085 | -2105 | -2202 | -2360 | 97 | 50 | 26 | 1 |
| 17N 6E | 19 | SE NW SW | FLYNN OIL CO. | LADD #2 | -3341 | 816 | -2004 | -2046 | -2092 | -2106 | -2195 | -2348 | 89 | 14 | 14 | 1 |
| 17N 6E | 19 | NE SW SE | FOSTER DRLG. CO. | ARMSTRONG #1 | -3347 | 841 | -1957 | -2009 | -2049 | -2059 | -2157 | -2314 | 98 | 20 | 14 | 1 |
| 17N 6E | 20 | SE SE NW | UNITED DEVEL. CO. | SOPHIA DOOLEY #1 | -3311 | 892 | -1891 | -1935 | -1978 | -1988 | -2096 | -2250 | 108 | 31 | 19 | 1 |
| 17N 6E | 21 | SW SW SE | BRUNS OIL CO. | MYRICK #1 | -3246 | 862 | -1789 | -1835 | -1872 | -1880 | -1987 | -2151 | 107 | 24 | 24 | 1 |
| 17N 6E | 21 | SW SW SW | R.L. KEMP ET AL | SANDERS #1 | -3298 | 922 | -1838 | -1891 | -1928 | -1940 | -2040 | -2204 | 100 | 11 | 8 | 1 |
| 17N 6E | 22 | SE NW NW | C.L. MCMAHON, INC. | WAKOLE NO. 1 | -3113 | 845 | -1656 | -1706 | -1745 | -1755 | -1854 | -2015 | 99 | 0 | 0 | 1 |
| 17N 6E | 22 | SE NE NW | EASON OIL CO. | MOCO #1 | -2863 | 858 | -1627 | -1674 | -1712 | -1722 | -1829 | -1980 | 107 | 18 | 14 | 1 |
| 17N 6E | 23 | NE NE SW | FORDEE RHOADES OIL CO. | WRIGHT #1 | -3155 | 906 | -1534 | -1583 | -1619 | -1631 | -1740 | -1894 | 109 | 30 | 26 | 1 |
| 17N 6E | 23 | C NW NE | ROY L. KEMP | B. F. COOK #1 | -3173 | 887 | -1516 | -1564 | -1599 | -1608 | -1685 | -1868 | 77 | 10 | 5 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17N 6E | 26 | SE SE NW | BIG FOUR PETR. CO. | W. MATHEWS #1 | -3072 | 921 | -1491 | -1501 | -1549 | -1559 | -1665 | -1839 | 108 | 14 | 14 | 1 |
| 17N 6E | 26 | NE NE SW | BIG FOUR PETR. CO. | FAIRES #1-A | -3595 | 935 | -1480 | -1512 | -1544 | -1565 | -1654 | -1806 | 89 | 11 | 7 | 1 |
| 17N 6E | 26 | NW NW SE | F. A. GILLESPIE & SON | NEWSOM #2 | -3115 | 944 | -1483 | -1511 | -1546 | -1556 | -1666 | -1811 | 110 | 12 | 18 | 1 |
| 17N 6E | 27 | C N/2 NW SW | BARRUCH & FOSTER | MYRICK #1-A | -3126 | 857 | -1688 | -1712 | -1756 | -1768 | -1877 | -2029 | 109 | 9 | 7 | 0 |
| 17N 6E | 27 | NE NE SW | KETCHUM-WHAN | COOK #2 | -3105 | 904 | -1649 | -1676 | -1717 | -1726 | -1830 | -1987 | 104 | 26 | 14 | 1 |
| 17N 6E | 27 | SW SW NE | L.B. JACKSON & OLSON DRLG. CO. | WRIGHT #1 | -3020 | 902 | -1636 | -1655 | -1676 | -1707 | -1821 | -1969 | 114 | 41 | 25 | 0 |
| 17N 6E | 27 | NW NW SW | R. L. KEMP & L. B. JACKSON | COOK #1 | -3130 | 871 | -1688 | -1716 | -1756 | -1771 | -1868 | -2027 | 97 | 14 | 14 | 1 |
| 17N 6E | 27 | SE SE NE | ROY L. KEMP | WRIGHT #1 | -3198 | 944 | -1605 | -1626 | -1662 | -1672 | -1784 | -1940 | 122 | 40 | 40 | 0 |
| 17N 6E | 28 | NE SW SW | DELMAC CO. | B. F. #1 | -3607 | 893 | -1792 | -1827 | -1872 | -1886 | -1982 | -2143 | 96 | 15 | 15 | 0 |
| 17N 6E | 28 | NW NW SE | FOSTER DRLG. CO. | SADIE NO. 1 | -3331 | 916 | -1752 | -1777 | -1819 | -1833 | -1932 | -2092 | 99 | 14 | 14 | 1 |
| 17N 6E | 28 | SW NW SW | L. B. JACKSON & R. L. KEMP | MYERS #1 | -3387 | 918 | -1832 | -1856 | -1902 | -1916 | -2010 | -2172 | 94 | 20 | 16 | 1 |
| 17N 6E | 28 | SE SE SE | L.B. JACKSON | TYNER #1 | -3052 | 891 | -1746 | -1771 | -1813 | -1830 | -1925 | -2084 | 95 | 5 | 5 | 1 |
| 17N 6E | 29 | SE SE SW | BLACKWELL OIL & GAS CO. ET AL | LEE BASS #1 | -3336 | 908 | -1926 | -1947 | -1993 | -2011 | -2099 | -2256 | 88 | 13 | 13 | 1 |
| 17N 6E | 29 | SW NW SW | JOSALINE PRODUCTION CO. | LEE BASS #1 | -3381 | 885 | -1942 | -1984 | -2032 | -2048 | -2132 | -2293 | 84 | 10 | 6 | 1 |
| 17N 6E | 29 | SW SW SW | JOSALINE PRODUCTION CO. | LEE BASS #2 | -3381 | 877 | -1855 | -1978 | -2028 | -2043 | -2126 | -2290 | 83 | 10 | 7 | 1 |
| 17N 6E | 29 | SW SW NW | R. SIMON GLEN GILLESPIE & SONS ET. | DEACON #1 | -3338 | 862 | -1936 | -1980 | -2023 | -2038 | -2133 | -2288 | 95 | 10 | 10 | 1 |
| 17N 6E | 29 | NE NW SE | T.O. LILLY-STRAND, JR. | MIZE NO. 1 | -3341 | 905 | -1877 | -1926 | -1969 | -1986 | -2076 | -2235 | 90 | 28 | 20 | 0 |
| 17N 6E | 30 | NE SW SW | BLACKWELL OIL & GAS CO. | GELBHAR #2 | -3321 | 825 | -1995 | -2033 | -2077 | -2092 | -2181 | -2338 | 89 | 26 | 12 | 1 |
| 17N 6E | 30 | NE NW SW | BLACKWELL OIL & GAS CO. | GELBHAR #3 | -3331 | 826 | -1993 | -2035 | -2085 | -2097 | -2190 | -2344 | 93 | 16 | 9 | 1 |
| 17N 6E | 30 | SE SW NE | CLARA PRODUCTION | #1 BURK | -3410 | 842 | -1978 | -2004 | -2060 | -2074 | -2166 | -2318 | 92 | 39 | 24 | 1 |
| 17N 6E | 30 | NE NE NW | FOSTER DRLG. CO. | LOIS DEACON #1 | -3336 | 827 | -1982 | -2033 | -2072 | -2083 | -2182 | -2340 | 99 | 16 | 14 | 1 |
| 17N 6E | 30 | SW SW SE | OLSON OIL CO. | E. DEACON A #8 | -3355 | 827 | -1976 | -2013 | -2057 | -2073 | -2163 | -2322 | 90 | 20 | 20 | 1 |
| 17N 6E | 30 | SW SE SE | OLSON OIL CO. | E. DEACON A #8 | -3386 | 892 | -1966 | -1993 | -2043 | -2055 | -2141 | -2303 | 86 | 0 | 0 | 1 |
| 17N 6E | 30 | SW SW NE | OLSON OIL CO. | ROSS BEALL #1-A | -3313 | 829 | -1973 | -2017 | -2065 | -2081 | -2171 | -2326 | 90 | 25 | 13 | 1 |
| 17N 6E | 30 | NE SW NE | OLSON OIL CO. | ROSCOE BEALL #2 | -3327 | 845 | -1956 | -2007 | -2048 | -2065 | -2151 | -2315 | 86 | 19 | 16 | 1 |
| 17N 6E | 31 | NE NE SE | HARP OIL CO. | WOLF #1 | -3314 | 849 | -1971 | -1994 | -2041 | -2060 | -2131 | -2291 | 71 | 0 | 0 | 1 |
| 17N 6E | 31 | NW NE NW | KEYSTONE OIL CO. | SCHREIBER #1 | -3424 | 829 | -2010 | -2038 | -2083 | -2102 | -2181 | -2345 | 79 | 2 | 2 | 1 |
| 17N 6E | 31 | SW SE NW | OLSON OIL CO. | SCHREIBER #3 | -3427 | 833 | -2019 | -2047 | -1992 | -2109 | -2186 | -2355 | 87 | 6 | 4 | 1 |
| 17N 6E | 32 | NW NW NW | GILLESPIE & KEMP | ROBERSON #1 | -3865 | 905 | -1947 | -1973 | -2017 | -2035 | -2121 | -2275 | 86 | 6 | 4 | 1 |
| 17N 6E | 32 | SE SE NW | KEMP-DIRICKSON & LEWIS | ROBISON #2 | -3304 | 876 | -1914 | -1939 | -1983 | -2002 | -2084 | -2240 | 82 | 5 | 5 | 1 |
| 17N 6E | 33 | SW NW NE | L. B. JACKSON | WAGGNER NO. 3 | -3206 | 908 | -1784 | -1810 | -1852 | -1870 | -1961 | -2119 | 91 | 26 | 22 | 1 |
| 17N 6E | 34 | SE SE SW | D & L OIL CO. | HALSTEAD NO. 1 | -3567 | 924 | -1734 | -1751 | -1799 | -1816 | -1905 | -2066 | 89 | 20 | 16 | 1 |
| 17N 6E | 34 | NW NW | MIDLAND CO-OP WHOLESALE | BROWN #1 | -3023 | 876 | -1740 | -1763 | -1805 | -1822 | -1917 | -2073 | 95 | 2 | 2 | 1 |
| 18N 4E | 1 | NW SE NE | DEEP ROCK OIL CORP. | EDDIE #1 | -3940 | 860 | -2214 | -2260 | -2292 | -2309 | -2385 | -2525 | 76 | 22 | 22 | 0 |
| 18N 4E | 1 | NW NW NW | H.A. TULLY | WILSON #6 | -3506 | 954 | -2196 | -2235 | -2275 | -2286 | -2376 | -2511 | 90 | 37 | 29 | 0 |
| 18N 4E | 1 | NW SW NE | LEWIS & MUCHER | KELLY #1 | -3540 | 961 | -2209 | -2249 | -2288 | -2302 | -2389 | -2527 | 87 | 32 | 32 | 0 |
| 18N 4E | 1 | NW NW NW | PATTON BROTHERS & TULLY | WILSON #1 | -3486 | 905 | -2194 | -2236 | -2272 | -2282 | -2373 | -2505 | 91 | 33 | 33 | 1 |
| 18N 4E | 1 | SW SW NW | PATTON BROTHERS & TULLY | WILSON #4 | -3398 | 901 | -2189 | -2244 | -2282 | -2293 | -2383 | -2519 | 90 | 34 | 34 | 1 |
| 18N 4E | 1 | NW NW SW | WOODS DRLG. CO. | STEPHENS #1 | -3382 | 797 | -2213 | -2259 | -2293 | -2303 | -2390 | -2528 | 87 | 32 | 26 | 0 |
| 18N 4E | 2 | NE NE SE | BAY PETR. CORP & PATTON BROS. | MORLEY #1 | -3378 | 797 | -2213 | -2257 | -2297 | -2304 | -2395 | -2529 | 91 | 32 | 27 | 1 |
| 18N 4E | 2 | SE NE NE | GILLESPIE & MUNGER | BUTCHER #2 | -3450 | 882 | -2196 | -2237 | -2271 | -2283 | -2373 | -2510 | 90 | 30 | 30 | 1 |
| 18N 4E | 2 | SE SE NE | PATON BROTHERS DRLG. CO. | BUTCHER-JAMES #1 | -3409 | 803 | -2206 | -2250 | -2283 | -2294 | -2387 | -2527 | 93 | 30 | 30 | 1 |
| 18N 4E | 2 | NE SE NE | PATTON BROTHERS DRLG. CO. | BUTCHER JAMES #2 | -3501 | 883 | -2207 | -2245 | -2262 | -2283 | -2380 | -2520 | 87 | 24 | 24 | 1 |
| 18N 4E | 2 | SW NE NE | SKELLY OIL CO. | BUTCHER #1 | -3926 | 942 | -2201 | -2240 | -2280 | -2293 | -2370 | -2514 | 77 | 0 | 0 | 1 |
| 18N 4E | 5 | SE SW NE | J. TOM GRIMMETT | BENNETT #1 | -4216 | 924 | -2409 | -2471 | -2506 | -2524 | -2589 | -2730 | 65 | 0 | 0 | 0 |
| 18N 4E | 5 | C NW NE | PETROMARK RESOURCES CO. | LAFRANCE NO. 1-5 | -4182 | 956 | -2417 | -2481 | -2515 | -2523 | -2595 | -2739 | 72 | 3 | 3 | 0 |
| 18N 4E | 5 | NE NE NW | SUN OIL CO. | LINSENMEYER #1 | -4281 | 955 | -2430 | -2487 | -2517 | -2533 | -2604 | -2745 | 71 | 3 | 3 | 0 |
| 18N 4E | 8 | NE NW NW | CARDINAL DRLG. CORP. | BENNETT #1 | -3885 | 907 | -2507 | -2569 | -2616 | -2628 | -2685 | -2822 | 57 | 0 | 0 | 0 |
| 18N 4E | 10 | C SW SE NW | STATEX PETR. INC. | MCFARLAND NO. 1-10 | -4044 | 913 | -2287 | -2332 | -2365 | -2376 | -2452 | -2593 | 76 | 0 | 0 | 0 |
| 18N 4E | 10 | C SW NW SE | STATEX PETR. INC. | ALETHA NO. 1-10 | -4006 | 872 | -2310 | -2361 | -2397 | -2408 | -2474 | -2630 | 66 | 0 | 0 | 0 |
| 18N 4E | 11 | SW SE SW | DEEP ROCK OIL CORP. | CORRELL #1 | -3658 | 863 | -2305 | -2348 | -2391 | -2400 | -2490 | -2627 | 90 | 18 | 18 | 1 |
| 18N 4E | 11 | NE NW NW | T.N. BERRY & CO. | BARKER #1 | -3936 | 903 | -2265 | -2310 | -2349 | -2357 | -2452 | -2592 | 95 | 38 | 38 | 1 |
| 18N 4E | 15 | SE SE NW | THE TEXAS CO. | G.T. NORTON #1 | -4217 | 928 | -2328 | -2372 | -2410 | -2422 | -2506 | -2651 | 84 | 28 | 28 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18N 4E | 16 | SE SE NE | A.P.A. INC. | HOPE NO. 1 | -3743 | 883 | -2356 | -2414 | -2452 | -2461 | -2536 | -2679 | 75 | 6 | 6 | 0 |
| 18N 4E | 16 | NW SE NW | DAVON OIL & GAS CO. | STATE #1 | -4221 | 930 | -2402 | -2449 | -2485 | -2495 | -2570 | -2710 | 75 | 18 | 13 | 0 |
| 18N 4E | 17 | NE NW SE | DONALD E RODGERS JR. | RODGERS #1 | -4181 | 884 | -2434 | -2481 | -2519 | -2527 | -2601 | -2710 | 74 | 3 | 3 | 0 |
| 18N 4E | 21 | SE SW SW | G.C. TISDALE | BOYD #1 | -4227 | 897 | -2413 | -2462 | -2511 | -2523 | -2582 | -2723 | 59 | 0 | 0 | 0 |
| 18N 4E | 21 | NE NE NW | MID-CONTINENT PETR. + D406 CORP. | BALLARD NO. 1 | -4109 | 846 | -2354 | -2396 | -2438 | -2449 | -2541 | -2672 | 92 | 27 | 27 | 2 |
| 18N 4E | 22 | NE SE SW | ANDERSON, PLANK & ARNAO | GIBSON #1 | -3674 | 898 | -2303 | -2349 | -2392 | -2402 | -2471 | -2619 | 69 | 4 | 4 | 0 |
| 18N 4E | 22 | NE SW NW | M.B. ARMER ET AL | GIBSON #1 | -4162 | 815 | -2354 | -2402 | -2447 | -2456 | -2525 | -2668 | 69 | 0 | 0 | 0 |
| 18N 4E | 22 | SE NE SE | THE TEXAS CO. | BALLARD #1 | -3898 | 818 | -2228 | -2274 | -2320 | -2331 | -2396 | -2545 | 65 | 4 | 4 | 0 |
| 18N 4E | 23 | SE NW SW | DEEP ROCK OIL CORP. | BROYLES #1 | -3804 | 810 | -2219 | -2263 | -2309 | -2320 | -2388 | -2540 | 68 | 0 | 0 | 0 |
| 18N 4E | 23 | NW SE SW | MUL-BERRY OIL CO. | BROYLES #10 | -3804 | 814 | -2182 | -2226 | -2370 | -2282 | -2344 | -2497 | 62 | 0 | 0 | 0 |
| 18N 4E | 23 | NE SW SE | THOMAS N. BERRY CO. | BROYLES #1 | -3762 | 806 | -2164 | -2208 | -2255 | -2264 | -2328 | -2480 | 64 | 0 | 0 | 0 |
| 18N 4E | 26 | NW NW SE | EL DORADO DRLG., INC. | CIRCLE T RANCH #2 | -4164 | 967 | -2242 | -2300 | -2345 | -2353 | -2428 | -2531 | 75 | 0 | 0 | 0 |
| 18N 4E | 27 | SW NE | SUN EXPL. AND PROD. CO. | JOHNSON PARTNERSHIP NO. 1 | -4009 | 864 | -2292 | -2343 | -2388 | -2396 | -2460 | -2574 | 64 | 0 | 0 | 0 |
| 18N 4E | 28 | NE SE SE | C.E. MCCAUGHEY ET AL | STANOLIND ET AL #1 | -4148 | 898 | -2351 | -2381 | -2451 | -2459 | -2527 | -2677 | 68 | 0 | 0 | 0 |
| 18N 4E | 29 | NE SE SE | H. WAGGONER & CO. | WILSON #1 | -3753 | 884 | -2418 | -2466 | -2516 | -2524 | -2590 | -2730 | 66 | 6 | 4 | 0 |
| 18N 4E | 31 | SE SE NW | FOSTER DRLG. CO. | BOUDREAU-HARLOW #1 | -3699 | 846 | -2505 | -2532 | -2604 | -2614 | -2674 | -2816 | 60 | 0 | 0 | 0 |
| 18N 4E | 31 | NE SE SW | FOSTER DRLG. CO. | GRIMM #1 | -3852 | 827 | -2441 | -2488 | -2536 | -2549 | -2608 | -2743 | 59 | 0 | 0 | 0 |
| 18N 4E | 32 | NW SW SW | DELANEY DRLG. CO. ET AL | BALLARD #1 | -4205 | 930 | -2401 | -2449 | -2500 | -2511 | -2570 | -2720 | 59 | 0 | 0 | 0 |
| 18N 4E | 33 | SW NW SW | H. WAGGONER | COOK #1 | -4271 | 897 | -2428 | -2478 | -2528 | -2541 | -2603 | -2761 | 62 | 0 | 0 | 0 |
| 18N 4E | 33 | NW SW NE | H. WAGGONER | H. JENKINS #1 | -4153 | 870 | -2391 | -2438 | -2489 | -2500 | -2560 | -2706 | 60 | 0 | 0 | 0 |
| 18N 4E | 35 | SW SE NW | C. ANDRADE THIRD | HONEYWELL #1 | -3730 | 937 | -2293 | -2336 | -2385 | -2392 | -2496 | -2633 | 104 | 38 | 22 | 2 |
| 18N 4E | 35 | SW NE SE | HOME GAS CO OF CUSHING | MANDEVILLE #1 | -4060 | 966 | -2199 | -2237 | -2288 | -2304 | -2434 | -2557 | 130 | 47 | 38 | 2 |
| 18N 4E | 35 | SE SW NE | ROY STARR OIL & GAS CO. | GEORGIA #1 | -4023 | 952 | -2216 | -2268 | -2305 | -2315 | -2458 | -2588 | 143 | 71 | 34 | 2 |
| 18N 4E | 36 | SE NW NW | CAREY & DERBY | STATE #1 | -4182 | 958 | -2251 | -2282 | -2340 | -2348 | -2483 | -2601 | 137 | 7 | 4 | 2 |
| 18N 4E | 36 | SE NE SE | HOME GAS CO. | STATE #1-B (TRACT #12) | -3687 | 901 | -2224 | -2264 | -2314 | -2323 | -2418 | -2585 | 95 | 72 | 72 | 2 |
| 18N 4E | 36 | NW SW SE | HOME GAS CO. OF CUSHING | STATE #1-D | -3710 | 937 | -2262 | -2297 | -2352 | -2363 | -2459 | -2618 | 86 | 63 | 52 | 1 |
| 18N 4E | 36 | SE NW SW | HOME GAS CO. OF CUSHING | STATE #1-C | -3730 | 993 | -2233 | -2273 | -2321 | -2327 | -2427 | -2584 | 100 | 58 | 42 | 1 |
| 18N 4E | 36 | NW SW NW | TRANS ATLANTIC RESOURCE CORP. | EWALT #1 | -4206 | 974 | -2248 | -2291 | -2340 | -2347 | -2451 | -2555 | 104 | 0 | 0 | 2 |
| 18N 5E | 1 | SE SW SE | KINGERY PRODUCTION CO. | ELLIS #1 | -3144 | 820 | -1939 | -1959 | -2005 | -2014 | -2121 | -2263 | 107 | 52 | 52 | 2 |
| 18N 5E | 2 | NW NW SW | HARRIS & SUPPES | VICKERY #2 | -3140 | 793 | -1936 | -1966 | -2006 | -2018 | -2126 | -2277 | 108 | 86 | 86 | 2 |
| 18N 5E | 2 | NW SE NE | LAFAYETTE OIL CO. | LAUGHLIN HEIRS NO.2 | -3545 | 854 | -1859 | -1891 | -1934 | -1946 | -2046 | -2196 | 100 | 76 | 76 | 2 |
| 18N 5E | 3 | N/2 NW NE | BERRY OPERATING CO. | MARY RYAN #1 | -3857 | 824 | -1955 | -2016 | -2058 | -2076 | -2207 | -2324 | 131 | 57 | 23 | 1 |
| 18N 5E | 3 | SE SE SE | HARRIS & SUPPES | HARRIS #1 | -3179 | 797 | -1973 | -2006 | -2044 | -2053 | -2213 | -2313 | 160 | 73 | 73 | 2 |
| 18N 5E | 3 | SE SW SE | HARRIS & SUPPES DRLG. CO. | HARLOW #1 | -3197 | 792 | -1998 | -2025 | -2067 | -2079 | -2223 | -2338 | 144 | 83 | 74 | 2 |
| 18N 5E | 3 | NW SE NE | LAFAYETTE OIL CO. | HARRIS #4 | -3229 | 831 | -1964 | -1993 | -2038 | -2047 | -2157 | -2299 | 110 | 54 | 28 | 1 |
| 18N 5E | 3 | SE NE SE | LAFAYETTE OIL CO. | ECHO-HAWK B#1 | -3203 | 798 | -1963 | -1994 | -2032 | -2048 | -2162 | -2302 | 114 | 70 | 70 | 1 |
| 18N 5E | 3 | SE SE NE | LAFAYETTE OIL CO. | HARRIS #2 | -3263 | 867 | -1952 | -1983 | -2023 | -2032 | -2142 | -2290 | 110 | 76 | 47 | 1 |
| 18N 5E | 3 | NE NE SE | LAFAYETTE OIL CO. | ECHO HAWK A#1 | -3175 | 789 | -1958 | -1991 | -2030 | -2043 | -2152 | -2296 | 109 | 59 | 59 | 2 |
| 18N 5E | 3 | NE SE NE | THOMAS N. BERRY & CO. | HARRIS #1 | -3344 | 844 | -1938 | -1967 | -2026 | -2037 | -2126 | -2276 | 89 | 71 | 53 | 2 |
| 18N 5E | 5 | C WL W/2 SW | WOODS DRLG. CO. | MANSFIELD #1 | -3710 | 799 | -2076 | -2112 | -2157 | -2163 | -2241 | -2386 | 78 | 0 | 0 | 0 |
| 18N 5E | 6 | NW SW SE | BLACKWELL OIL & GAS CO. | BRYANT #1 | -3715 | 794 | -2112 | -2156 | -2191 | -2206 | -2277 | -2424 | 71 | 0 | 0 | 1 |
| 18N 5E | 6 | SE SE NW | FOSTER DRLG. CO. | JESSIE DOBSON #1 | -3696 | 800 | -2169 | -2210 | -2252 | -2262 | -2334 | -2478 | 72 | 0 | 0 | 0 |
| 18N 5E | 6 | C SE SE | J. E. CROSBIE | BRYANT #1-B | -3679 | 797 | -2048 | -2088 | -2134 | -2146 | -2216 | -2352 | 70 | 0 | 0 | 1 |
| 18N 5E | 6 | SE NE SE | WOODS DRLG. CO. | BRYANT #1 | -3680 | 805 | -2074 | -2114 | -2157 | -2166 | -2235 | -2381 | 69 | 0 | 0 | 0 |
| 18N 5E | 7 | N/2 NE SE | ALTMAN OPERATING CO. | L.G. CARTER NO. 5 | -3800 | 883 | -2100 | -2137 | -2188 | -2199 | -2275 | -2417 | 76 | 0 | 0 | 0 |
| 18N 5E | 7 | SW SW | BIG FOUR PETR. CO. | WELLS #1 | -3781 | 867 | -2111 | -2156 | -2198 | -2211 | -2286 | -2432 | 75 | 0 | 0 | 0 |
| 18N 5E | 7 | NW NW NE | BLACKWELL OIL & GAS CO. | BRYANT #B-1 | -3610 | 796 | -2097 | -2140 | -2182 | -2196 | -2262 | -2404 | 66 | 0 | 0 | 0 |
| 18N 5E | 7 | SW SE SW | WOODS DRLG. CO. | JOHN GOSS #5 | -3814 | 891 | -2090 | -2133 | -2176 | -2184 | -2258 | -2397 | 74 | 0 | 0 | 0 |
| 18N 5E | 8 | SW SE SW | B.M. HEATH | HEAVENER #1 | -3564 | 903 | -2112 | -2151 | -2197 | -2207 | -2282 | -2429 | 75 | 0 | 0 | 0 |
| 18N 5E | 8 | NE SE SW | MAC ENGINEERING & OPERATING CO. | HENDERSON #1 | -3852 | 875 | -2125 | -2159 | -2210 | -2218 | -2303 | -2445 | 85 | 2 | 2 | 0 |
| 18N 5E | 8 | NE NW NW | WOODS DRLG. CO. | J. BRINK #1 | -3504 | 801 | -2089 | -2137 | -2178 | -2189 | -2258 | -2399 | 69 | 0 | 0 | 0 |
| 18N 5E | 9 | SW NW SW | BLACKWELL-MULBERRY & BERRY | FISHER #2 | -3430 | 849 | -2081 | -2120 | -2160 | -2161 | -2257 | -2398 | 96 | 12 | 8 | 2 |
| 18N 5E | 10 | NE NW SE | COMAIL OIL CO. | SMITH #5 | -3198 | 785 | -2015 | -2043 | -2093 | -2103 | -2190 | -2337 | 87 | 37 | 37 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18N 5E | 10 | SE SE SE | E.J. ATHENS & COMAIL OIL CO. | SMITH #1 | -3258 | 831 | -2031 | -2040 | -2106 | -2114 | -2213 | -2357 | 89 | 44 | 44 | 1 |
| 18N 5E | 10 | NE NE NE | HARRIS & SUPPES | LAUGHLIN #3 | -3194 | 793 | -1987 | -2017 | -2057 | -2067 | -2176 | -2320 | 109 | 34 | 34 | 1 |
| 18N 5E | 10 | SE SW NE | HARRIS & SUPPES | MELZL #1 | -3185 | 786 | -2012 | -2040 | -2088 | -2097 | -2186 | -2332 | 89 | 37 | 42 | 1 |
| 18N 5E | 10 | SE SE SW | L. J. ATHENS | LEWIS JESKE #1 | -3347 | 888 | -2045 | -2077 | -2121 | -2128 | -2227 | -2372 | 99 | 49 | 29 | 1 |
| 18N 5E | 11 | SW NW SW | COMAIL OIL CO. | ORR-JESKE UNIT #1 | -3224 | 790 | -2015 | -2039 | -2088 | -2100 | -2215 | -2344 | 115 | 60 | 28 | 2 |
| 18N 5E | 11 | SE SE SE | HANLON-BOYLE INC. | JESKE #1 | -3237 | 841 | -1976 | -1996 | -2038 | -2048 | -2168 | -2310 | 120 | 46 | 46 | 2 |
| 18N 5E | 11 | SE SW NW | HARRIS & SUPPES | EAGLE #4 | -3201 | 785 | -1991 | -2015 | -2060 | -2068 | -2180 | -2325 | 112 | 34 | 34 | 1 |
| 18N 5E | 11 | SW NW NE | LELAND F. LONG ET AL | OZMUN #1 | -3199 | 832 | -1948 | -1976 | -2015 | -2026 | -2141 | -2288 | 115 | 74 | 74 | 2 |
| 18N 5E | 11 | SE SE NE | THE TEXAS CO. | W.D. COLE #7 | -3231 | 856 | -1932 | -1959 | -2000 | -2012 | -2127 | -2271 | 115 | 80 | 80 | 1 |
| 18N 5E | 11 | NW SE NE | THE TEXAS CO. | W.D. COLE #4 | -3123 | 874 | -1918 | -1943 | -1981 | -1993 | -2108 | NP | 115 | 74 | 74 | 2 |
| 18N 5E | 11 | NE SW SW | WALTER D. CALDWELL | JESKE #3 | -3202 | 791 | -2020 | -2039 | -2090 | -2100 | -2199 | -2345 | 99 | 30 | 30 | 1 |
| 18N 5E | 12 | NE NW SE | C.E. MCCAUGHEY | ATKINS NO.1 | -3160 | 807 | -1966 | -1992 | -2033 | -2042 | -2155 | -2284 | 113 | 61 | 52 | 2 |
| 18N 5E | 12 | SW SW NE | C.E. MCCAUGHEY | HITT NO.1 | -3193 | 804 | -1955 | -1976 | -2019 | -2032 | -2142 | -2286 | 110 | 52 | 52 | 2 |
| 18N 5E | 12 | SE SE SE | GULF COAST WESTERN OIL CO. | ESTATE LAND #1 | -3845 | 815 | -1967 | -2003 | -2046 | -2059 | -2173 | -2315 | 114 | 50 | 44 | 1 |
| 18N 5E | 12 | SE SW NW | HYDROCARBONS DEVEL. CORP. | KOBLE #3 | -3222 | 836 | -1954 | -1974 | -2019 | -2028 | -2147 | -2295 | 119 | 82 | 82 | 2 |
| 18N 5E | 12 | NW NW SE | WOOD OIL CO. | CARTER #1 | -3462 | 816 | -1952 | -1975 | -2021 | -2029 | -2143 | -2292 | 114 | 60 | 58 | 2 |
| 18N 5E | 13 | NW NW NW | BLACKWELL OIL & GAS CO. | SARAH BIGWALKER #1 | -3190 | 824 | -1978 | -2004 | -2046 | -2057 | -2169 | -2313 | 112 | 42 | 42 | 2 |
| 18N 5E | 13 | SW SE SW | GENERAL EXPL. CO. | GREEN #3 | -3647 | 827 | -1992 | -2014 | -2055 | -2065 | -2165 | -2308 | 100 | 26 | 26 | 2 |
| 18N 5E | 13 | SW SW SE | KEMP & LOFFLAND | GRASS #1 | -3224 | 840 | -1995 | -2042 | -2084 | -2092 | -2188 | -2326 | 96 | 22 | 22 | 1 |
| 18N 5E | 14 | NE NE NE | DIRICKSON-LEWIS DRLG. CO. | HOUSTON #1 | -3476 | 827 | -1982 | -2007 | -2053 | -2062 | -2175 | -2321 | 113 | 46 | 40 | 2 |
| 18N 5E | 14 | SW SW SE | FALCON-SEABOARD DRLG. CO. | CRUZAN #1 | -3810 | 858 | -2004 | -2033 | -2082 | -2093 | -2212 | -2352 | 119 | 72 | 72 | 2 |
| 18N 5E | 14 | SE SE NW | HANLON-BOYLE INC. | MAXMILLER#1 (SIMS HEIRS) | -3270 | 840 | -2025 | -2050 | -2100 | -2109 | -2207 | -2348 | 98 | 38 | 22 | 1 |
| 18N 5E | 14 | NW NW NE | O'BRIEN CO. | THURMAN #1 | -3791 | 879 | -1996 | -2016 | -2063 | -2072 | -2185 | -2326 | 113 | 48 | 48 | 1 |
| 18N 5E | 14 | NW SW NW | RICH-HOLMAN OIL CO. | SIMS #1-B | -3321 | 884 | -2022 | -2062 | -2107 | -2120 | -2213 | -2354 | 93 | 26 | 10 | 2 |
| 18N 5E | 14 | SE NW NE | SUNRAY OIL CORP. | THURMAN NO. 1 | -3251 | 846 | -2004 | 3714 | -2068 | -2083 | -2189 | -2331 | 106 | 45 | 26 | 1 |
| 18N 5E | 14 | NE SE SW | T-H DRLG. CORP. | STANOLIND NO. 5 | -3344 | 876 | -2024 | -2047 | -2094 | -2103 | -2219 | -2363 | 116 | 70 | 70 | 2 |
| 18N 5E | 14 | NE NE SW | T-H DRLG. CORP. | STANOLIND NO.8 | -3288 | 848 | -2034 | -2057 | -2107 | -2117 | -2210 | -2352 | 93 | 32 | 14 | 1 |
| 18N 5E | 14 | NW SW SW | T-H DRLG. CORP. | STANOLIND NO. 7 | -3318 | 888 | -2032 | -2057 | -2102 | -2112 | -2222 | -2362 | 110 | 62 | 48 | 2 |
| 18N 5E | 15 | SE NE NW | CLEMMER-CALDWELL | KING #2 | -3346 | 885 | -2048 | -2074 | -2126 | -2137 | -2231 | -2378 | 94 | 46 | 42 | 2 |
| 18N 5E | 15 | SE NE NE | E.J. ATHENS | GAUNT #2 | -3338 | 890 | -2038 | -2060 | -2111 | -2124 | -2216 | -2358 | 92 | 20 | 10 | 1 |
| 18N 5E | 15 | SE NW NW | E.J. ATHENS | GAUNT #4 | -3283 | 821 | -2033 | -2059 | -2106 | -2119 | -2216 | -2359 | 97 | 35 | 35 | 2 |
| 18N 5E | 15 | SW NE NE | E.J. ATHENS | GAUNT #3 | -3325 | 869 | -2035 | -2056 | -2109 | -2120 | -2216 | -2360 | 96 | 36 | 24 | 1 |
| 18N 5E | 15 | SE SE NE | GLENN GILLESPIE & SONS | GAUNT #B-1 | -3319 | 890 | -2015 | -2043 | -2091 | -2099 | -2209 | -2346 | 110 | 57 | 47 | 2 |
| 18N 5E | 15 | SW SE SE | GLENN GILLESPIE & SONS | GAUNT #A-4 | -3298 | 887 | -2028 | -2053 | -2105 | -2113 | -2217 | -2361 | 104 | 45 | 45 | 2 |
| 18N 5E | 15 | NE NE SE | J. E. CROSBIE, INC. | L. D. GAUNT # 1 | -3852 | 887 | -2020 | -2056 | -2099 | -2105 | -2213 | -2313 | 108 | 55 | 26 | 2 |
| 18N 5E | 16 | SW SW SE | APPLETON OIL CO. | SCHOOL LAND #1 | -3623 | 853 | -2081 | -2111 | -2158 | -2167 | -2271 | -2412 | 104 | 24 | 8 | 1 |
| 18N 5E | 16 | SE SE NW | D & L OIL CO. & WILCOX | PATERSON #1 | -3846 | 848 | -2078 | -2107 | -2153 | -2167 | -2261 | -2403 | 94 | 63 | 45 | 2 |
| 18N 5E | 16 | SW SW NW | JET OIL CO. | STATE PAYNE NO. 2 | -3769 | 853 | -2068 | -2082 | -2156 | -2166 | -2288 | -2402 | 92 | 43 | 19 | 2 |
| 18N 5E | 17 | SE SE NE | L.B. JACKSON | HARRIS #1 | -3849 | 860 | -2082 | -2116 | -2160 | -2173 | -2269 | -2410 | 96 | 56 | 56 | 2 |
| 18N 5E | 17 | NE SE NE SE | R.C. JONES & CO. INC. | HEAVENER #1 | -3863 | 868 | -2089 | -2121 | -2172 | -2182 | -2270 | -2412 | 88 | 26 | 22 | 1 |
| 18N 5E | 18 | NE SW SW | C.J. BROWN | THOMPSON NO. 1 | -3876 | 813 | -2174 | -2209 | -2261 | -2272 | -2342 | -2487 | 70 | 0 | 0 | 1 |
| 18N 5E | 20 | NE NE SW | FALCON SEABOARD | DILLON #1 | -4061 | 945 | -2165 | -2195 | -2245 | -2255 | -2338 | -2495 | 83 | 0 | 0 | 0 |
| 18N 5E | 20 | SE SW SE | ROY LAWRENCE | DILLON & LAUGHLIN #1 | -3682 | 898 | -2148 | -2169 | -2223 | -2234 | -2330 | -2478 | 96 | 12 | 12 | 2 |
| 18N 5E | 21 | NE SW SE | WARREN BRADSHAW EXPL. CO. | CARVER #2 | -3904 | 936 | -2096 | -2118 | -2174 | -2184 | -2286 | -2436 | 102 | 56 | 56 | 2 |
| 18N 5E | 22 | SW NE SE | C. .E MCCAUGHEY | REED NO. 6 | -3372 | 873 | -2053 | -2087 | -2123 | -2137 | -2252 | -2397 | 115 | 76 | 76 | 2 |
| 18N 5E | 22 | NW SE SE | C. E. MCCAUGHEY | REED NO. 3 | -3374 | 805 | -2111 | -2137 | -2180 | -2201 | -2308 | -2457 | 107 | 65 | 65 | 2 |
| 18N 5E | 22 | SE NE NE | M. R. SWEARINGIN | BUNCH #1 | -3334 | 862 | -2052 | -2075 | -2118 | -2131 | -2238 | -2382 | 107 | 62 | 62 | 2 |
| 18N 5E | 22 | NE NE NE | M. R. SWEARINGIN | BUNCH #2 | -3331 | 867 | -2045 | -2068 | -2113 | -2123 | -2232 | -2377 | 109 | 68 | 68 | 2 |
| 18N 5E | 22 | SE SE NE | R. F. KETCHUM & AND. PLANK ARNAO | JOHNSTON #1 | -3368 | 877 | -2048 | -2076 | -2127 | -2143 | -2249 | -2398 | 106 | 73 | 73 | 2 |
| 18N 5E | 22 | NW SE NW | RESERVE ENERGY CORP. | THOMPSON #1-22 | -4200 | 903 | -2095 | -2118 | -2164 | -2176 | -2273 | -2417 | 97 | 53 | 27 | 1 |
| 18N 5E | 23 | NW SW SW | ANDERSON, PLANK & ARNAO | RITCHEY #4 | -3310 | 837 | -2027 | -2053 | -2102 | -2110 | -2225 | -2370 | 116 | 65 | 60 | 1 |
| 18N 5E | 23 | NW SW NE | ANDERSON-PLANK & ARNAO | LAUGHLIN ESTATE NO. 1 | -3219 | 818 | -2010 | -2030 | -2072 | -2087 | -2202 | -2347 | 115 | 74 | 74 | 1 |
| 18N 5E | 23 | SW SW NW | ANDERSON-PLANK & ARNAO | SHANNESY #1 | -3340 | 867 | -2044 | -2067 | -2113 | -2125 | -2233 | -2376 | 108 | 64 | 60 | 1 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE $S | MAX PRUE $S | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18N 5E | 23 | NW NE SW | ANDERSON-PLANK & ARNAO | RAFFERTY #1 | -3308 | 851 | -2019 | -2047 | -2093 | -2103 | -2217 | -2367 | 114 | 84 | 84 | 2 |
| 18N 5E | 23 | SE SW SW | ANDERSON-PLANK & ARNAO | RITCHEY #1 | -3266 | 824 | -2006 | -2032 | -2076 | -2087 | -2206 | -2355 | 119 | 96 | 96 | 1 |
| 18N 5E | 23 | NE NW NW | ANDERSON-PLANK & ARNAO | SHANNESY #4 | -3329 | 867 | -2033 | -2058 | -2101 | -2113 | -2223 | -2367 | 110 | 63 | 63 | 1 |
| 18N 5E | 23 | NE NW NE | GLOBE OIL & REFG. CO. | HARBIN #3 | -3285 | 839 | -1999 | -2017 | -2065 | -2079 | -2191 | -2336 | 112 | 76 | 76 | 1 |
| 18N 5E | 23 | NE NW NE | GLOBE OIL & REFINING CO. | HARBIN #4 | -3263 | 814 | -1984 | -2004 | -2051 | -2057 | -2176 | -2319 | 119 | 77 | 53 | 1 |
| 18N 5E | 23 | NE SW SE | PETR. RESOURCES CO. | J. EXTON #1 | -4489 | 845 | -1972 | -2004 | -2040 | -2051 | -2172 | -2312 | 121 | 69 | 49 | 2 |
| 18N 5E | 25 | NW SE SE | A.P.A. INC. | FREUND NO. 2 | -3327 | 876 | -1986 | -2011 | -2054 | -2064 | -2193 | -2338 | 129 | 96 | 96 | 2 |
| 18N 5E | 25 | NW NE SW | A.P.A. INC. | EXTON NO. 3-B | -3330 | 911 | -1974 | -1995 | -2045 | -2059 | -2179 | -2324 | 120 | 103 | 103 | 2 |
| 18N 5E | 25 | SE SE NW | A.P.A. INC. | EXTON NO. 2-B | -3338 | 896 | -1984 | -2004 | -2055 | -2064 | -2188 | -2337 | 124 | 105 | 103 | 2 |
| 18N 5E | 25 | SE SW NW | CURT BROWN DRLG. CO. | EXTON #1 | -3874 | 896 | -1974 | -1995 | -2043 | -2053 | -2180 | -2322 | 127 | 83 | 30 | 2 |
| 18N 5E | 25 | SE NW SW | W.H. MARTGAN | FREUND #1 | -3941 | 924 | -1981 | -2001 | -2048 | -2056 | -2185 | -2335 | 129 | 104 | 104 | 2 |
| 18N 5E | 26 | NW NW SW | A.P.A. INC. | ALLES NO. 1 | -3366 | 921 | -2015 | -2038 | -2087 | -2099 | -2213 | -2363 | 114 | 81 | 81 | 2 |
| 18N 5E | 26 | NW NW SE | A.P.A. INC. | MOORE #1 | -3288 | 853 | -1995 | -2019 | -2069 | -2080 | -2204 | -2357 | 124 | 94 | 94 | 2 |
| 18N 5E | 26 | SE SW SW | A.P.A. INC. | GARMAN-ALLES NO.1 | -3345 | 917 | -2009 | -2030 | -2076 | -2092 | -2217 | -2362 | 125 | 96 | 96 | 2 |
| 18N 5E | 26 | NE NW NW | ANDERSON-PLANK & ARNAO | EXTON #1 | -3270 | 853 | -2009 | -2031 | -2079 | -2089 | -2211 | -2357 | 122 | 82 | 72 | 2 |
| 18N 5E | 26 | SE NW NW | ANDERSON-PLANK & ARNAO | EXTON #2 | -3318 | 867 | -2012 | -2035 | -2082 | -2094 | -2208 | -2354 | 114 | 85 | 85 | 2 |
| 18N 5E | 26 | SE SW NE | BAY PETR. CORP. | THOMPSON #2 | -3694 | 868 | -2002 | -2018 | -2070 | -2078 | -2177 | -2327 | 99 | 80 | 76 | 2 |
| 18N 5E | 27 | NW SE SE | H. WAGONER CO. | CARTER #1 | -3774 | 911 | -2009 | -2031 | -2079 | -2089 | -2201 | -2347 | 112 | 80 | 80 | 2 |
| 18N 5E | 27 | NW NW SE | J.A. HANNAH | SMITH NO. 1 | -3339 | 874 | -2047 | -2068 | -2116 | -2126 | -2242 | -2386 | 116 | 78 | 78 | 2 |
| 18N 5E | 27 | SW SE NW | KETCHUM OIL CO. | DRAKE NO. 1 | -3397 | 870 | -2079 | -2114 | -2149 | -2160 | -2275 | -2422 | 115 | 86 | 86 | 2 |
| 18N 5E | 27 | NE NE NE | TRICE PRODUCTION CO. ET AL | GENERAL AMERICAN NO. 1 | -3324 | 846 | -2068 | -2086 | -2138 | -2149 | -2274 | -2419 | 125 | 92 | 92 | 2 |
| 18N 5E | 27 | SW NE SE | WOODS DRLG. CO. | #1 CARTER OIL CO. | -3888 | 813 | -2018 | -2043 | -2091 | -2103 | -2217 | -2317 | 114 | 81 | 81 | 2 |
| 18N 5E | 28 | SW SE SW | D & L OIL CO & HARLOW PETR. CO. | BROOKSHIRE #1 | -3516 | 953 | -2086 | -2109 | -2159 | -2172 | -2269 | -2427 | 97 | 38 | 38 | 2 |
| 18N 5E | 28 | NE NE NE | FOSTER DRLG. CO. | WAGONER #1 | -3835 | 908 | -2080 | -2102 | -2156 | -2162 | -2272 | -2422 | 110 | 68 | 68 | 2 |
| 18N 5E | 28 | NE SW SE | N.T. SMITH | HARRIS #1 | -3410 | 918 | -2092 | -2115 | -2172 | -2180 | -2288 | -2439 | 108 | 68 | 62 | 2 |
| 18N 5E | 29 | C SW SE | KETCHUM-WHAN DRLG. CO. | HARTER #1 | -3551 | 939 | -2081 | -2108 | -2161 | -2171 | -2251 | -2428 | 80 | 0 | 0 | 0 |
| 18N 5E | 29 | NE NW SW | WOODS DRLG. CO. | CLARK #1 | -3642 | 913 | -2079 | -2107 | -2161 | -2168 | -2259 | -2420 | 91 | 0 | 0 | 0 |
| 18N 5E | 31 | SW SE SW | DEEP ROCK OIL CORP. | STILES #1 | -3652 | 860 | -2204 | -2239 | -2288 | -2298 | -2393 | -2560 | 95 | 60 | 54 | 1 |
| 18N 5E | 31 | SW SW NE | FOSTER DRLG. CO. | HALL #1 | -3475 | 839 | -2140 | -2172 | -2221 | -2231 | -2326 | -2491 | 95 | 42 | 42 | 1 |
| 18N 5E | 31 | SW NW NW | FOSTER DRLG. CO. | YOUNT #5 | -3532 | 834 | -2163 | -2221 | -2274 | -2284 | -2366 | -2531 | 82 | 17 | 9 | 1 |
| 18N 5E | 32 | SE NW SW | HOME GAS CO. OF CUSHING | LAMSON NO. 2 NORTH | -3601 | 879 | -2159 | -2189 | -2241 | -2249 | -2357 | -2521 | 108 | 47 | 47 | 2 |
| 18N 5E | 32 | SE SW NE | MIZEL & BANKOFF | FUNNEL #1 | -3689 | 902 | -2132 | -2163 | -2210 | -2218 | -2318 | -2476 | 100 | 34 | 34 | 1 |
| 18N 5E | 32 | NE SW SE | THE TEXAS CO. | W.E. CARDIN #3 | -3633 | 970 | -2168 | -2197 | -2250 | -2260 | -2335 | -2504 | 75 | 0 | 0 | 0 |
| 18N 5E | 32 | SW SW SE | THE TEXAS CO. | CARDIN NO. 1-B | -3808 | 970 | -2168 | -2202 | -2250 | -2259 | -2345 | -2510 | 86 | 0 | 0 | 0 |
| 18N 5E | 33 | NW NE SE | FOSTER DRLG. CO. | FISHER NO. 1 | -3384 | 893 | -2012 | -2048 | -2088 | -2099 | -2196 | -2348 | 97 | 20 | 20 | 1 |
| 18N 5E | 34 | NW NE NE | H. WAGGONER | JAMES #1 | -3773 | 888 | -2017 | -2043 | -2097 | -2107 | -2218 | -2367 | 112 | 75 | 75 | 2 |
| 18N 5E | 35 | NW NW NW | A.P.A. INC. | THOMPSON #1 | -3375 | 930 | -2020 | -2042 | -2090 | -2104 | -2216 | -2380 | 112 | 85 | 85 | 2 |
| 18N 5E | 35 | NW NW SW | A.P.A. INC. | LITTLE NO. 1 | -3384.5 | 946 | -2034 | -2052 | -2104 | -2114 | -2230 | -2374 | 116 | 51 | 45 | 2 |
| 18N 5E | 35 | SE SW SE | RAY DUNNETT | H.C. WATERS | -3368 | 932 | -2044 | -2074 | -2121 | -2131 | -2226 | -2380 | 95 | 8 | 8 | 1 |
| 18N 5E | 36 | SE SE SE | ROYAL OIL & GAS CORP. | STATE OF OKLA. NO. 40-1 | -3797 | 840 | -1986 | -2010 | -2063 | -2072 | -2195 | -2354 | 123 | 74 | 45 | 2 |
| 18N 6E | 2 | NW SW SW | L.B. JACKSON | BICKELL #1 | -3273 | 912 | -1691 | -1719 | -1760 | -1772 | -1853 | -1998 | 81 | 10 | 4 | 0 |
| 18N 6E | 2 | NE | OKLA. PETR. MGMT. CORP. | WRIGHT #2 | -3455 | 880 | -1706 | -1733 | -1778 | -1790 | -1862 | -1978 | 72 | 0 | 0 | 0 |
| 18N 6E | 2 | SE NW SW | OKLA. PETR. MGMT. CORP. | BEDING FIELD NO. 1 | -3436 | 917 | -1705 | -1729 | -1771 | -1785 | -1883 | -1975 | 98 | 0 | 0 | 0 |
| 18N 6E | 2 | NW SW NE | PETREX OIL & GAS EXPL. | FRANKLIN NO. 2 | -3498 | 849 | -1739 | -1762 | -1804 | -1819 | -1899 | -1899 | 80 | 8 | 8 | 0 |
| 18N 6E | 2 | SW SE NW | THOMAS N. BERRY | LORETTE #1 | -3466 | 895 | -1731 | -1737 | -1800 | -1815 | -1891 | -2040 | 76 | 2 | 2 | 0 |
| 18N 6E | 3 | SW SW SW | L.B. JACKSON | GREEN #1 | -3347 | 935 | -1766 | -1791 | -1835 | -1847 | -1925 | -2075 | 78 | 28 | 14 | 0 |
| 18N 6E | 3 | C NE | OKLA. PETR. MGMT. CORP. | MOORE NO. 2 | -3564 | 972 | -1753 | -1776 | -1823 | -1834 | -1911 | -1920 | 77 | 0 | 0 | 0 |
| 18N 6E | 3 | C NE | OKLA. PETR. MGMT. CORP. | MOORE #1 | -3497 | 936 | -1737 | -1764 | -1811 | -1821 | -1899 | -2004 | 78 | 0 | 0 | 0 |
| 18N 6E | 4 | NE NE NE | MID-CONTINENT PETR. | SIMNITT #1 | -3585 | 989 | -1781 | -1804 | -1848 | -1861 | -1937 | -2084 | 76 | 6 | 3 | 0 |
| 18N 6E | 7 | SE NE NW | THE CARTER OIL CO. | MORRIS TANK FARM #2 | -3152 | 813 | -1947 | -1969 | -2015 | -2025 | -2113 | -2267 | 88 | 8 | 8 | 1 |
| 18N 6E | 8 | NW NW SE | RICH & HOLMAN OIL CO. | SCOTT #1 | -3088 | 819 | -1867 | -1893 | -1937 | -1951 | -2060 | -2195 | 109 | 6 | 4 | 1 |
| 18N 6E | 8 | NW NE NE | WESTWOOD ENERGY INC. | L.B. JACKSON #1 | -3612 | 868 | -1816 | -1836 | -1880 | -1892 | -1991 | -2140 | 99 | 0 | 0 | 0 |
| 18N 6E | 11 | SW SW SE | FOSTER DRLG. CO. | WILSON #1 | -3157 | 781 | -1725 | -1761 | -1801 | -1811 | -1899 | -2039 | 88 | 14 | 14 | 0 |

# WELL LOG DATA

**NP = not penetrated**

| T & R | SECTION | USPLS | OPERATOR | WELL NAME | TD | DATUM ELEVATION | TOP BIG LIME (SUBSEA) | TOP OSWEGO (SUBSEA) | TOP EXCELLO (SUBSEA) | BASE OSWEGO (SUBSEA) | TOP VERDIGRIS (SUBSEA) | TOP PINK LIME (SUBSEA) | TOTAL PRUE ISOPACH | NET PRUE SS | MAX PRUE SS | VERDIGRIS LOG TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18N 6E | 11 | NE SW SE | FOSTER DRLG. CO. | WILSON #2 | -3157 | 781 | -1719 | -1759 | -1798 | -1807 | -1889 | -2036 | 82 | 8 | 8 | 0 |
| 18N 6E | 11 | SW NW SE | FOSTER DRLG. CO. | WILSON #5 | -3175 | 784 | -1724 | -1765 | -1804 | -1816 | -1896 | -2041 | 80 | 7 | 7 | 0 |
| 18N 6E | 11 | NW NW NW | L.B. JACKSON | FARRELL #1 | -2905 | 875 | -1735 | -1765 | -1807 | -1821 | -1898 | NP | 77 | 26 | 22 | 0 |
| 18N 6E | 14 | SW NW NE | FOSTER DRLG. CO. | WILSON #4 | -3180 | 781 | -1721 | -1761 | -1799 | -1811 | -1897 | -1739 | 86 | 8 | 8 | 1 |
| 18N 6E | 16 | SW SE NE | CORONADO OIL CO. | SCHOOL LAND #1A | -3323 | 795 | -1845 | -1875 | -1920 | -1935 | -2015 | -1855 | 80 | 4 | 4 | 0 |
| 18N 6E | 16 | SW NE NW | ROYAL OIL & GAS CORP. | STATE OF OKLA. NO. 102-2 | -3573 | 830 | -1859 | -1890 | -1939 | -1950 | -2032 | -2185 | 82 | 0 | 0 | 0 |
| 18N 6E | 16 | NW SE SE | ROYAL OIL & GAS CORP. | STATE OF OKLA. NO. 105-2 | -3541 | 792 | -1833 | -1865 | -1905 | -1924 | -2004 | -2147 | 80 | 0 | 0 | 0 |
| 18N 6E | 17 | SW NW SE | RICH-HOLMAN OIL CO. | ISAAC MOORE #2 | -3080 | 775 | -1898 | -1925 | -1967 | -1975 | -2095 | -2237 | 120 | 0 | 0 | 1 |
| 18N 6E | 17 | NW SW SE | RICH-HOLMAN OIL CO. | ISAAC MOORE #1 | -3080 | 773 | -1900 | -1924 | -1968 | -1978 | -2094 | -2235 | 116 | 0 | 0 | 1 |
| 18N 6E | 17 | NE SW NW | W.H.MARTGAN | HALEY #1 | -3195 | 761 | -1929 | -1949 | -1995 | -2006 | -2119 | -2259 | 113 | 15 | 6 | 1 |
| 18N 6E | 20 | NW NE SE | ARTHUR RAMSEY PETR. CO. | ROBISON NO. 1 | -3240 | 858 | -1912 | -1940 | -1986 | -1996 | -2083 | -2235 | 87 | 0 | 0 | 0 |
| 18N 6E | 20 | NW NW SW | JONES & SHELBURNE | MANNING #1 | -3295 | 843 | -1839 | -1868 | -2007 | -2019 | -2129 | -2277 | 110 | 7 | 5 | 1 |
| 18N 6E | 20 | NW NW NE | W.H. MARTGAN | STALLSWORTH #1 | -3097 | 765 | -1903 | -1926 | -1973 | -1981 | -2095 | -2236 | 114 | 0 | 0 | 1 |
| 18N 6E | 20 | C W/2 NE NW | WESTWOOD ENERGY, INC. | MANNING NO. 1-20 | -3162 | 792 | -1926 | -1947 | -1989 | -1999 | -2113 | -2214 | 114 | 0 | 0 | 0 |
| 18N 6E | 21 | SE NW NE | FOSTER DRLG. CO. | PENCE #8 | -3079 | 817 | -1859 | -1887 | -1934 | -1945 | -2025 | -2175 | 80 | 0 | 0 | 1 |
| 18N 6E | 21 | SW SW NW | R.H. ENERGY, LTD. | SCHLEGEL NO. 4 | -3575 | 770 | -1902 | -1930 | -1980 | -1992 | -2076 | -2226 | 84 | 0 | 0 | 0 |
| 18N 6E | 22 | NW NW NW | WOLFE DRLG. CO. | AIKIN #1 | -3072 | 828 | -1826 | -1854 | -1901 | -1909 | -1995 | -2141 | 86 | 5 | 5 | 1 |
| 18N 6E | 23 | NW NW NE | FOSTER DRLG. CO. | BENTON #1 | -3170 | 774 | -1723 | -1761 | -1796 | -1806 | -1887 | -2036 | 81 | 8 | 8 | 0 |
| 18N 6E | 26 | NE SE NW | CORONADO OIL CO. | FOSTER #1 | -3255 | 862 | -1694 | -1734 | -1776 | -1788 | -1878 | -2023 | 90 | 20 | 10 | 1 |
| 18N 6E | 27 | SW NE SE | BIG FOUR PETR. | GRAYSON #2 | -3500 | 829 | -1726 | -1768 | -1807 | -1818 | -1908 | -2060 | 90 | 6 | 6 | 0 |
| 18N 6E | 28 | NE NE SW | EASON OIL CO. | MANNING #1 | -3348 | 803 | -1875 | -1912 | -1955 | -1967 | -2050 | -2207 | 83 | 3 | 3 | 0 |
| 18N 6E | 28 | NE NE SE | JERNIGAN & MORGAN OIL CO. | BETTY WILSON #1 | -3292 | 776 | -1835 | -1873 | -1916 | -1924 | -2013 | -2167 | 89 | 6 | 6 | 0 |
| 18N 6E | 29 | SW NW SW | D&L OIL CO. | BADGER NO. 1 | -3508 | 891 | -1959 | -1990 | -2036 | -2048 | -2139 | -2288 | 91 | 15 | 15 | 1 |
| 18N 6E | 29 | NW SE NW | DEEP ROCK OIL CORP. | MANNING #1 | -3696 | 898 | -1936 | -1967 | -2009 | -2018 | -2117 | -2271 | 99 | 0 | 0 | 1 |
| 18N 6E | 30 | C NW SW SW | RUSSELL COBB, JR. | MORGAN NO. 2 | -3316 | 873 | -1982 | -2007 | -2051 | -2058 | -2187 | -2334 | 129 | 94 | 94 | 2 |
| 18N 6E | 31 | NE NE | BARUCH FOSTER CORP. | CORA BASS #1 | -3785 | 911 | -1957 | -1984 | -2031 | -2045 | -2129 | -2286 | 84 | 22 | 22 | 0 |
| 18N 6E | 31 | NW NW NW | DIRICKSON & LEWIS | WINGET #1 | -3309 | 882 | -1970 | -1985 | -2038 | -2046 | -2178 | -2328 | 132 | 84 | 84 | 2 |
| 18N 6E | 31 | SE NW NW | KETCHUM OIL CO. | WINGET NO. 2 | -3311 | 895 | -1958 | -1987 | -2029 | -2041 | -2167 | -2317 | 126 | 74 | 68 | 2 |
| 18N 6E | 31 | SE SE NW | L. D. WRATHERS JR. | WINGET #1 | -3872 | 889 | -1953 | -1983 | -2026 | -2039 | -2157 | -2308 | 118 | 58 | 58 | 2 |
| 18N 6E | 32 | NW NW NE | G.W. DECK, JR. | RICHARD HAWK NO. 1 | -3417 | 822 | -1921 | -1958 | -1997 | -2008 | -2097 | -2248 | 89 | 0 | 0 | 0 |
| 18N 6E | 32 | SW SW SW | R.L. KEMP | ANDERSON #1 | -3462 | 826 | -1942 | -1978 | -2025 | -2034 | -2129 | -2278 | 95 | 8 | 6 | 1 |
| 18N 6E | 34 | SE SE NW | JENNINGS & CLOGG | DAVENPORT #1 | -2991 | 885 | -1757 | -1799 | -1840 | -1852 | -1939 | -2095 | 87 | 14 | 12 | 0 |
| 18N 6E | 34 | NE NW SW | MID CONTINENT PETR. CO. | ALMA DAVENPORT #1 | -2986 | 857 | -1768 | -1808 | -1855 | -1864 | -1952 | -2106 | 88 | 9 | 9 | 0 |
| 18N 6E | 34 | NE NW SE | T.N. BERRY CO. | #1 JOHNSON | -3576 | 880 | -1748 | -1790 | -1832 | -1847 | -1929 | -2040 | 82 | 10 | 10 | 1 |

# Plates A, B, C , D, E, F, and G.

R 4 E

R 5 E

R 6 E

T 18 N

T 17 N

T 16 N

CUSHING

CUSHING MUNICIPAL AIRPORT

AGRA

PAYNE CO.
LINCOLN CO.

Cimarron River

SCALE:

0 MILES 1

CONTOUR INTERVAL: 50 FEET

• WELL LOCATIONS

ALL VALUES IN FEET

# STRUCTURAL CONTOUR MAP
# TOP VERDIGRIS LIMESTONE

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

# PLATE A

R 4 E

R 5 E

R 6 E

T 18 N

T 17 N

T 16 N

Cimarron River

CUSHING

CUSHING MUNICIPAL AIRPORT

AGRA

PAYNE CO.
LINCOLN CO.

SCALE:

0 MILES 1

CONTOUR INTERVAL: 50 FEET

• WELL LOCATIONS

ALL VALUES IN FEET

# STRUCTURAL CONTOUR MAP
# TOP OSWEGO LIMESTONE

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

# PLATE B

R 4 E

R 5 E

R 6 E

T 18 N

T 17 N

T 16 N

Cimarron River

CUSHING

CUSHING MUNICIPAL AIRPORT

PAYNE CO.
LINCOLN CO.

AGRA

SCALE:

0 MILES 1

CONTOUR INTERVAL: 10 FEET

• WELL LOCATIONS

ALL VALUES IN FEET

# ISOPACH MAP
# PRUE SANDSTONE INTERVAL

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

# PLATE C

Thesis
1998
S861c
C

R 4 E

R 5 E

R 6 E

T 18 N

T 17 N

T 16 N

Cimarron River

CUSHING

CUSHING MUNICIPAL AIRPORT

AGRA

PAYNE CO.
LINCOLN CO.

SCALE:

0 MILES 1

CONTOUR INTERVAL: 10 FEET

• WELL LOCATIONS

ALL VALUES IN FEET

# NET SANDSTONE ISOLITH MAP
# PRUE SANDSTONE INTERVAL

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

Thesis
1998
S861c
D

# PLATE D

R 4 E

R 5 E

R 6 E

T 18 N

T 17 N

T 16 N

Cimarron River

CUSHING

CUSHING MUNICIPAL AIRPORT

AGRA

PAYNE CO.

LINCOLN CO.

## LEGEND

TYPE 0 LOG SIGNATURE

TYPE 1 LOG SIGNATURE

TYPE 2 LOG SIGNATURE

SCALE:

0 MILES 1

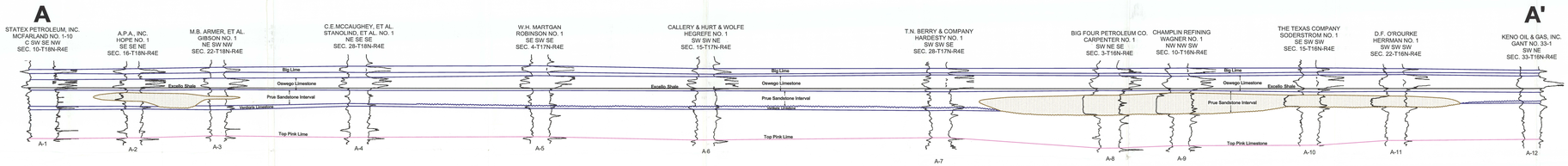
• WELL LOCATIONS

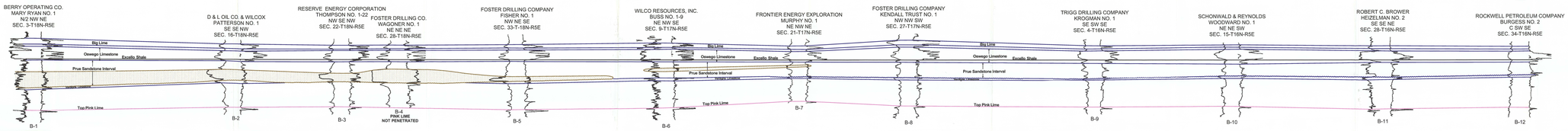
# PLATE E

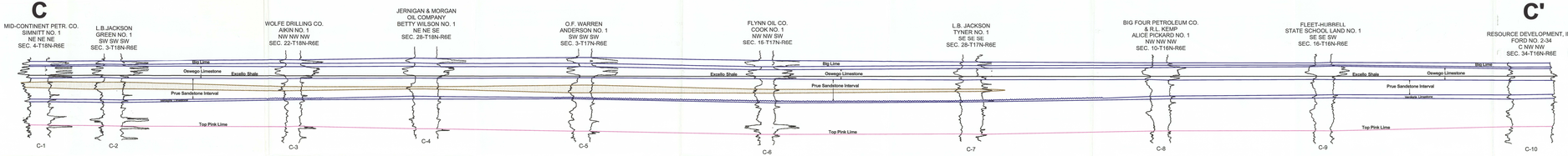
# VERDIGRIS LIMESTONE LOG SIGNATURE MAP

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

THESIS
1998
S281s
E




# PLATE F

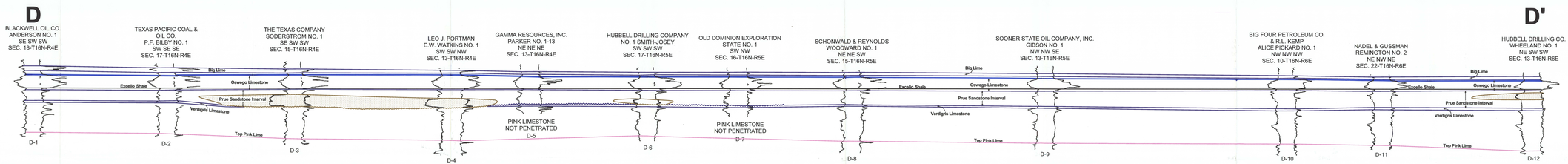
## NORTH-SOUTH STRATIGRAPHIC CROSS SECTIONS
## DATUM: EXCELLO SHALE

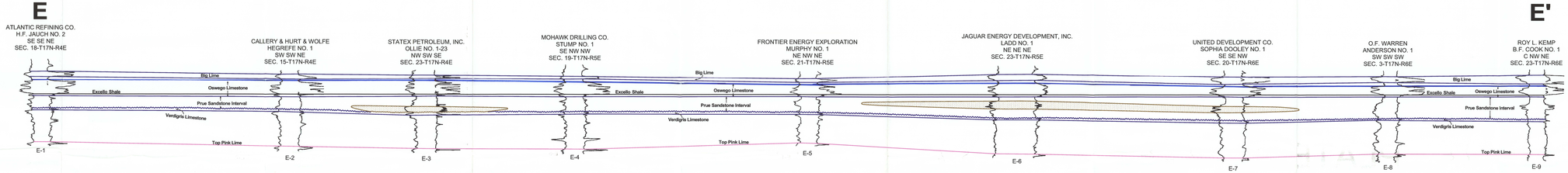
**HORIZONTAL SCALE 1 : 31680**
**VERTICAL SCALE 1 : 1200**

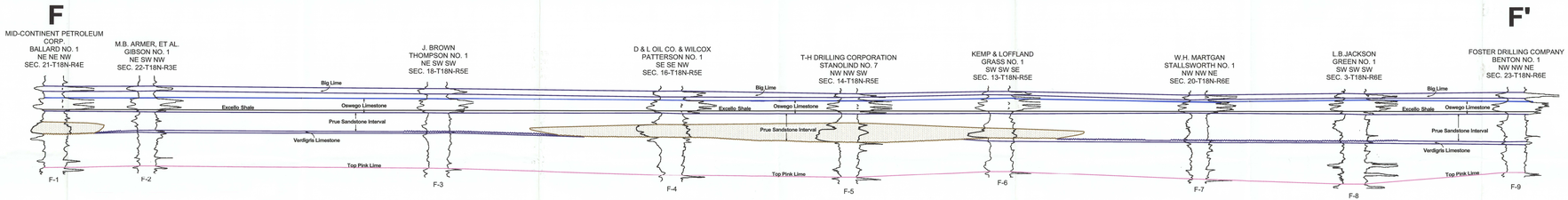
**VERTICAL EXAGGERATION: 26.4X**

1 MILE
100 FEET

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998




# PLATE G

**EAST-WEST STRATIGRAPHIC CROSS SECTIONS**
**DATUM: EXCELLO SHALE**

**HORIZONTAL SCALE 1 : 31680**
**VERTICAL SCALE 1 : 1200**

**VERTICAL EXAGGERATION: 26.4X**

1 MILE
100 FEET

SHELDON ANDREW STIRLING
M.S. THESIS
OKLAHOMA STATE UNIVERSITY
1998

VITA

Sheldon Andrew Stirling

Candidate for the Degree of

Master of Science

Thesis: SUBSURFACE STRATIGRAPHIC ANALYSIS OF THE PRUE SANDSTONE INTERVAL IN PORTIONS OF PAYNE AND LINCOLN COUNTIES, OKLAHOMA

Major Field: Geology

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma on October 23, 1972, the son of Deborah Jay and Sheldon Ludington Stirling, Jr.

Education: Graduated from Ponca City Senior High School, Ponca City, Oklahoma in May 1990; received Bachelor of Science degree in Geology from Oklahoma State University, Stillwater, Oklahoma in May 1995. Completed the requirements for the Master of Science degree with a major in Geology at Oklahoma State University in May, 1998.

Experience: Employed by Oklahoma State University School of Geology as a Teaching Assistant in Geology and Human Affairs, Physical Geology, Environmental Geology, and Geomorphology. Worked as a Geological Assistant for Masera Corporation, Tulsa, Oklahoma, during the summer of 1996. Employed by MDK Consultants, Stillwater, Oklahoma, as an Assistant Geologist during the fall 1997 and spring 1998 semesters.

Professional Memberships: American Association of Petroleum Geologists, Oklahoma State University Geological Society.