ELECTROSTRATIGRAPHY, THICKNESS, AND PETROPHYSICAL EVALUATION OF THE WOODFORD SHALE, ARKOMA BASIN, OKLAHOMA

By

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CHAPTER I

INTRODUCTION

Problem Statement

The Devonian-Mississippian Woodford Shale is acknowledged as a prolific source rock across much of Oklahoma and the Midcontinent (Lambert, 1990). Geochemical analyses show that the Woodford is reasonably rich in organic matter, with total organic carbon (TOC) concentrations in the Arkoma basin varying between 2 to 6.5 weight-percent (Hendrick, 1990). The Woodford Shale features distinctive log characteristics that are traceable across the Arkoma basin and beyond. The most distinctive feature is its "hot" gamma-ray signature. Over the last two decades, attention has turned to development of unconventional resources such as gas-shales, including more recently the Woodford Shale. Favorable market conditions have heightened interest in such plays within the last few years. Fittingly, most of the Woodford activity in the Arkoma basin occurred in the last four years targeting Coal, Hughes, and Pittsburg Counties (IHS data, 2007). One can justifiably presume that the early activity focused on areas within the basin where the Woodford is reasonably thick, suitably mature, and at depths that allow economic drilling.

The purpose of this study is to evaluate the gas-shale potential of the Woodford Shale on a basin-wide scale. To achieve this objective, four main questions were pursued.

1.) Is it possible to use well logs to construct the stratigraphic framework of the Woodford Shale in the Arkoma basin? 2.) If so, what is the distribution of the three informal stratigraphic units of the Woodford Shale? 3.) Can log-derived characteristics help define the regional extents to which the known Woodford play can be extended successfully? 4.) What other analyses are useful in determining the economic potential of undeveloped areas? No similar studies are published for the Woodford in the Arkoma basin, which emphasizes this endeavor's purpose, considering the brisk progression of the Woodford play.

Location of the Study Area

The study area encompasses most of the Arkoma basin in south-central Oklahoma (Figure 1). Attention was focused on the "core" area of the shale-gas play (Andrews, 2007) situated in Coal, Hughes, and Pittsburg Counties, in order to gain insight from the region where the Woodford is heavily targeted for production. Knowledge gained from this area will then be applied to the undeveloped regions of the basin with respect to Woodford production. The Arkoma basin extends from south-central Oklahoma into east-central Arkansas (Spötl et al, 1993). It is a Paleozoic foredeep basin that formed as a result of the Ouachita orogeny (Meckel et al, 1992). The Cherokee Platform and Ozark Uplift bound this province to the north and the Ouachita Mountains are south of the basin. The Arbuckle Mountains serve as the western boundary of the Arkoma basin (Stefos, 2005).

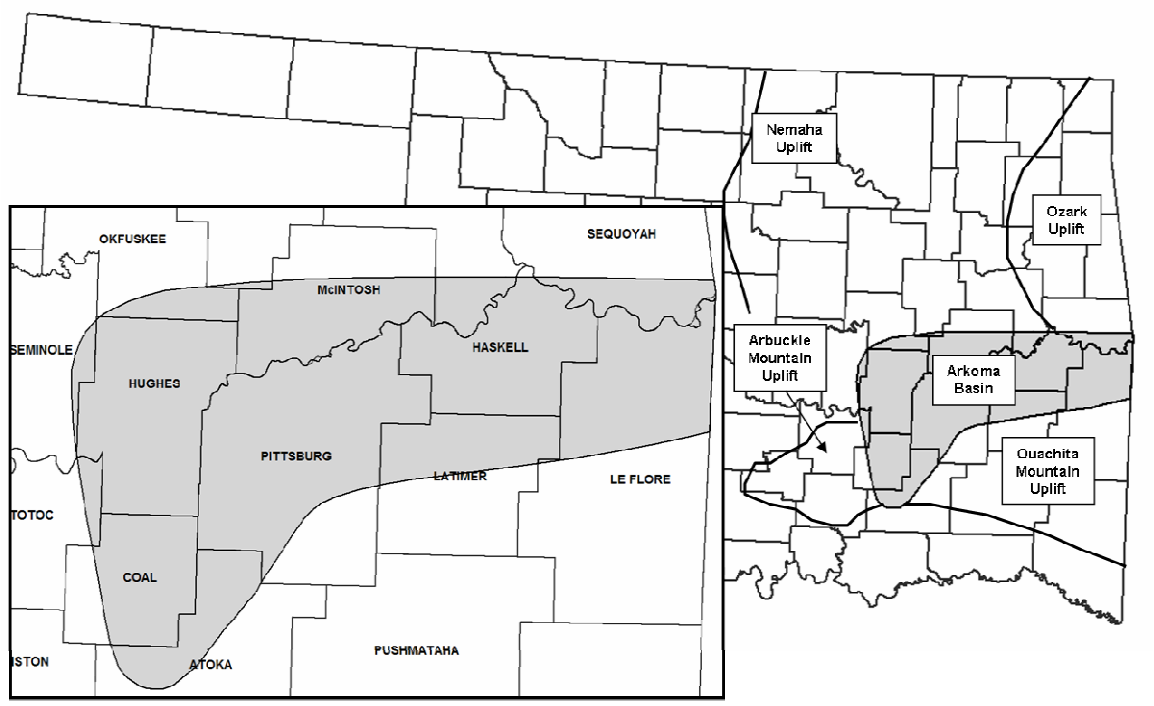


Figure 1**.** General study area in gray, in the Arkoma basin of southeastern Oklahoma (modified after Johnson and Cardott, 1992).

Overview of Woodford Play

As of writing, 215 wells produce from the Woodford in the Arkoma basin, 94 of these are horizontal; the remaining 121 are vertical (Plate 1). In 65 of the existing wells, Woodford production is commingled with production from other zones, presumably reflecting low Woodford production rates (summary of all Woodford producing wells in Appendix A). The highest cumulative production of all Woodford wells is .741 BCF from the Devon Energy, Billie Jean 1-20H, a horizontal well in section 20, T.3N., R.11E., Coal County, Oklahoma. Newfield Exploration is the leading company by well count in the Arkoma Woodford play with 95 completed wells. Devon Energy is second in well

count with 28, whereas Antero Resources and Chesapeake Energy both have 15 (IHS data, 2007).

By well count, the Woodford Shale play in the Arkoma basin commenced in earnest in 2004. Before 2004, only 8 Woodford completions were filed, whereas in 2004, 18 wells were completed with Woodford production. 57 completions followed in 2005, 117 in 2006, and as of July, 15 completions were recorded thus far for 2007 (Plates 2-6). IHS data (2007) reports 126 wells targeting the Woodford with drilling status (Plate 7).

CHAPTER II

LITERATURE REVIEW AND METHODOLOGY

Literature Review

The Late-Devonian Early-Mississippian Woodford Shale is known to have been a prolific source rock in Oklahoma (Comer and Hinch, 1987). Up to 8% of the world's original hydrocarbon reserves are estimated to have been sourced by the Woodford and its equivalents (Fritz et al, 1991). Many geochemical studies are published that identify and quantify the Woodford's organic carbon content (Lewan, 1983; Cardott and Lambert, 1985; Comer, 1992; Hendrick, 1992; Kirkland et al, 1992; Lambert 1993). Type-II kerogen is commonly the majority constituent with lesser abundance of both type-I and III kerogens (Lewan, 1983). Several studies focused on determining source rock characteristics from geophysical logs with the ultimate goal of quantifying TOC from density and gamma-ray logs for the Woodford and its equivalents (Schmoker, 1979; Schmoker, 1981; Schmoker and Hester, 1983; Hester, Schmoker, and Sahl, 1990). While useful, such empirical correlations are difficult to establish for the Woodford Shale in the Arkoma basin, as is illustrated in this study. Other geochemical studies (Houseknecht et al, 1992; Hendrick, 1992) indicate that significant regions exist within the Arkoma basin where the Woodford Shale is within the proper maturity window to generate significant hydrocarbons.

Aufill et al (2006) documented difficulties in correlating formation radioactivity with TOC in the Woodford Shale. From this research it was concluded that gamma-ray magnitude does not always correspond with organic richness. These results indicate that anoxic or euxenic conditions – often presumed to be a requirement for source rock formation (Demaison and Moore, 1980) – did not continuously prevail during Woodford deposition. Other Devonian-Mississippian Woodford-equivalent shales have displayed excellent correlation. Schmoker (1981) sampled Devonian shales in multiple basins and determined that bulk density is inversely proportional with radioactivity, which in turn is directly proportional to TOC. Formulas were then derived that calculate organic content from bulk density measurements. But even for the shales in which this relationship was established, correlation was restricted to a particular region of the respective basin and areas were found in which it lost applicability.

Another study of interest was compiled by Hester et al (1990). The authors interpreted and mapped the three informal stratigraphic units of the Woodford Shale in the Anadarko basin and calculated the average TOC for each unit. Their definition of the Woodford's stratigraphic units is slightly different than that outlined in this study. Despite the Woodford's strikingly similar gross character from basin to basin, there are significant differences in log signature between the Anadarko and Arkoma basins. Hester et al (1990) based their interpretation on the concept that the Woodford was not a single depositional package. The authors noted that by breaking the Woodford into its stratigraphic units, depositional changes are more easily interpreted.

The initial purpose of this study was to map the Woodford and its three stratigraphic units across the Arkoma basin. Accordingly, two papers of great

significance were the M.S. theses of Nikki Dennis (2004) and Michael Lambert (1992). Dennis (2004) mapped and analyzed the Woodford across a portion of Logan County, Oklahoma along the Nemaha Uplift. This particular study area contained many older wells, and as such, the most reliable data set for investigation was electric logs. Dennis (2004) defined both the stratigraphic makeup of the Woodford via well logs and identified potential methods for mapping the Woodford in areas beyond her study's geographic area. Lambert (1992) mapped the internal stratigraphy of the Woodford equivalent Chattanooga Shale, which he interpreted to also be composed of three units. Lambert mapped the Woodford across much of Kansas and correlated this framework with the Woodford Shale in northwestern Oklahoma. From his mapping, Lambert (1992) found that the distribution of the three Woodford units was consistent with the theory that the shale was deposited during a transgressive event from the south.

Bounding Strata

The Woodford is overlain by Mississippian carbonates and mudrocks (Figure 2). Throughout much of the Arkoma basin these rocks are informally called the Osagean Mayes Formation, which is an argillaceous limestone (Maughan, 2006). The Mayes is a subsurface name for the Ahloso unit of the Caney Shale (Boardman and Puckette, 2006). The Woodford Shale subcrop is far more variable, however, as Woodford deposition was preceded by an unconformity. Over vast expanses of the basin, the Woodford unconformably overlies the Hunton Group, a collection of Ordovician-Devonian carbonates that contains significant hydrocarbon reservoirs. These hydrocarbon accumulations are presumably sourced by the overlying Woodford shale (Johnson and

Cardott, 1992). Hunton Group thickness varies widely, and is commonly inversely proportional with Woodford thickness. In many areas a thin, highly eroded Hunton Group corresponds to thicker Woodford shale. However, exceptions to this inverse proportionality are found throughout the basin. These exceptions likely resulted from tectonics and modification of the surface upon which the Woodford was deposited following significant erosion of the Hunton Group. It is expected that as the Woodford sea transgression and resultant deposition progressed northward out of the basin, the lower Woodford would be deposited first in the deeper basinal settings and would then onlap onto the shelf. The Woodford would preferentially fill low topography and later onlap positive features. The Hunton Group was extensively eroded even in northern portions of the basin and uplifted prior to Woodford deposition. As a result, thin Woodford sections overlie thin remnants of the Hunton Group in many locations within the basin (Figure 3).

In cases where the Hunton Group was entirely removed by erosion, the Woodford commonly rests upon the Upper Ordovician Sylvan Shale (Figure 4). An even less frequent occurrence arises where the Sylvan was also removed, and Woodford was deposited upon the eroded surface of the Upper Ordovician Viola Limestone.

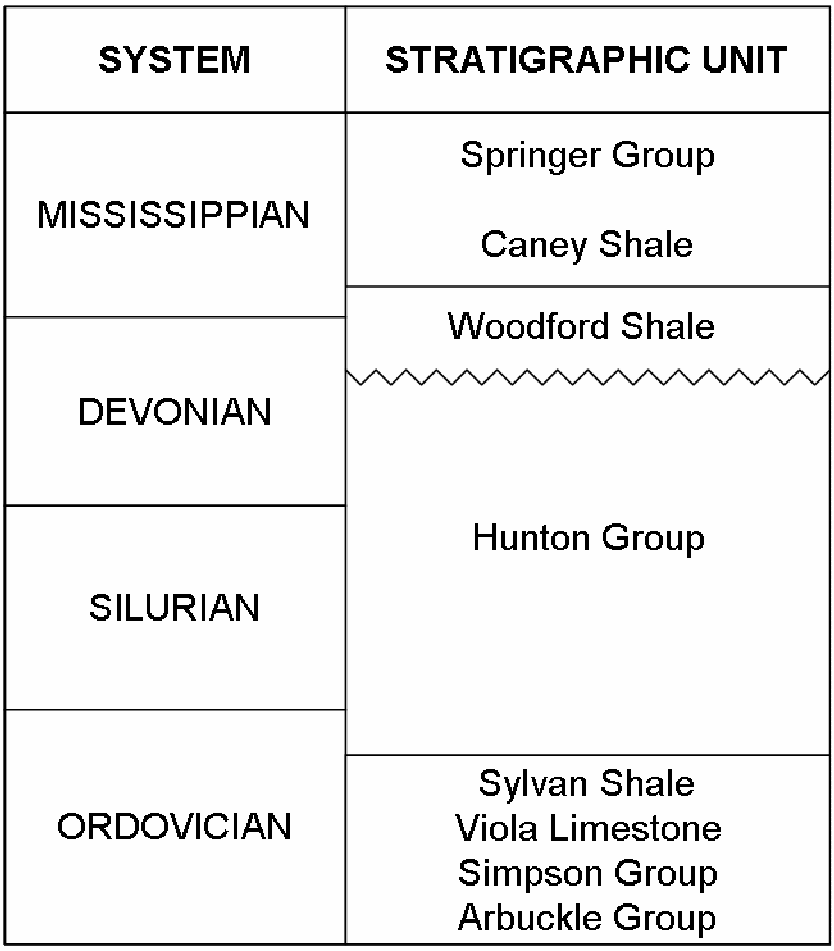


Figure 2. Generalized stratigraphic nomenclature for Ordovician to Mississippian strata in study area (modified after Perry, 1995).

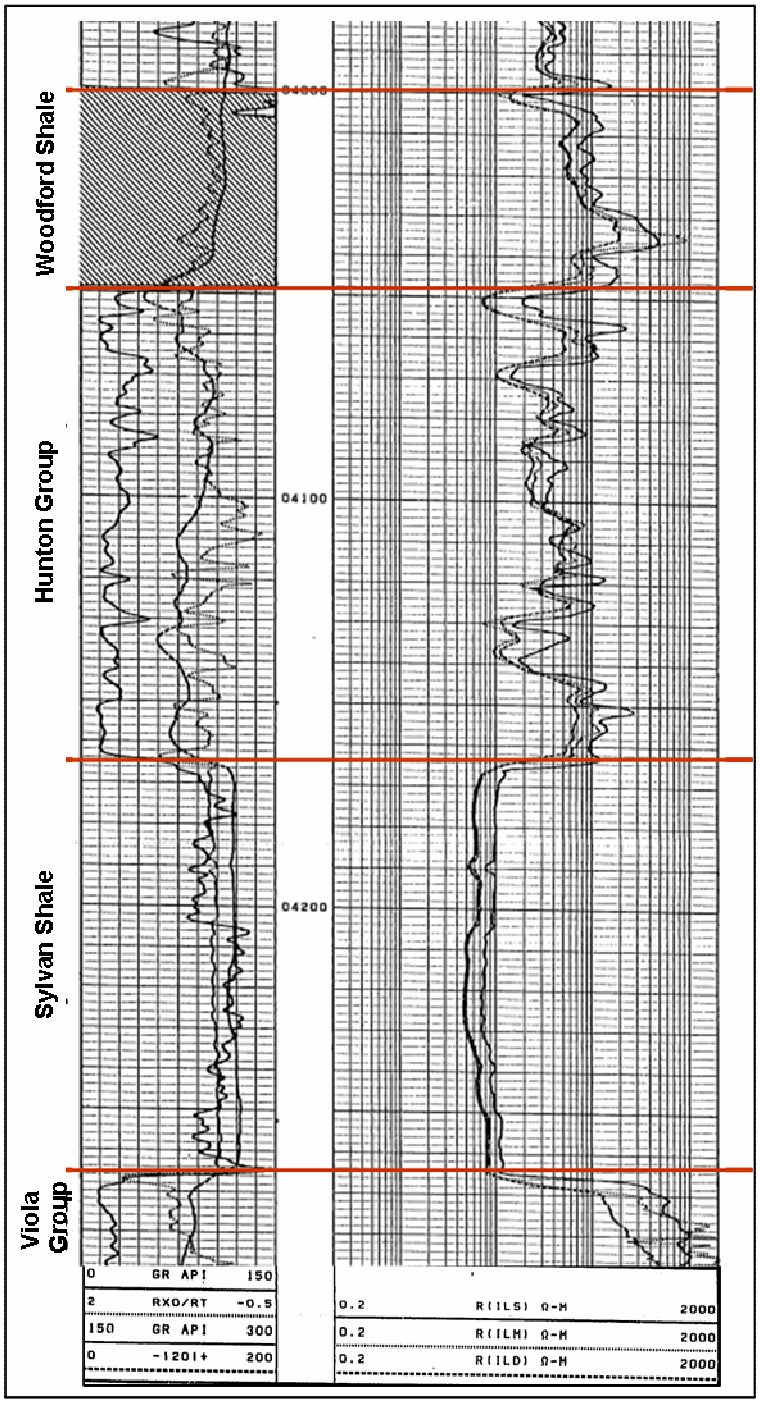


Figure 3**.** Example of thin Woodford shale resting on relatively thin Hunton Group carbonates. Gamma-ray and resistivity wireline well-log section from Liberty, Charlotte No. 1, located in Section 25, T.8N., R.8E., Hughes County.

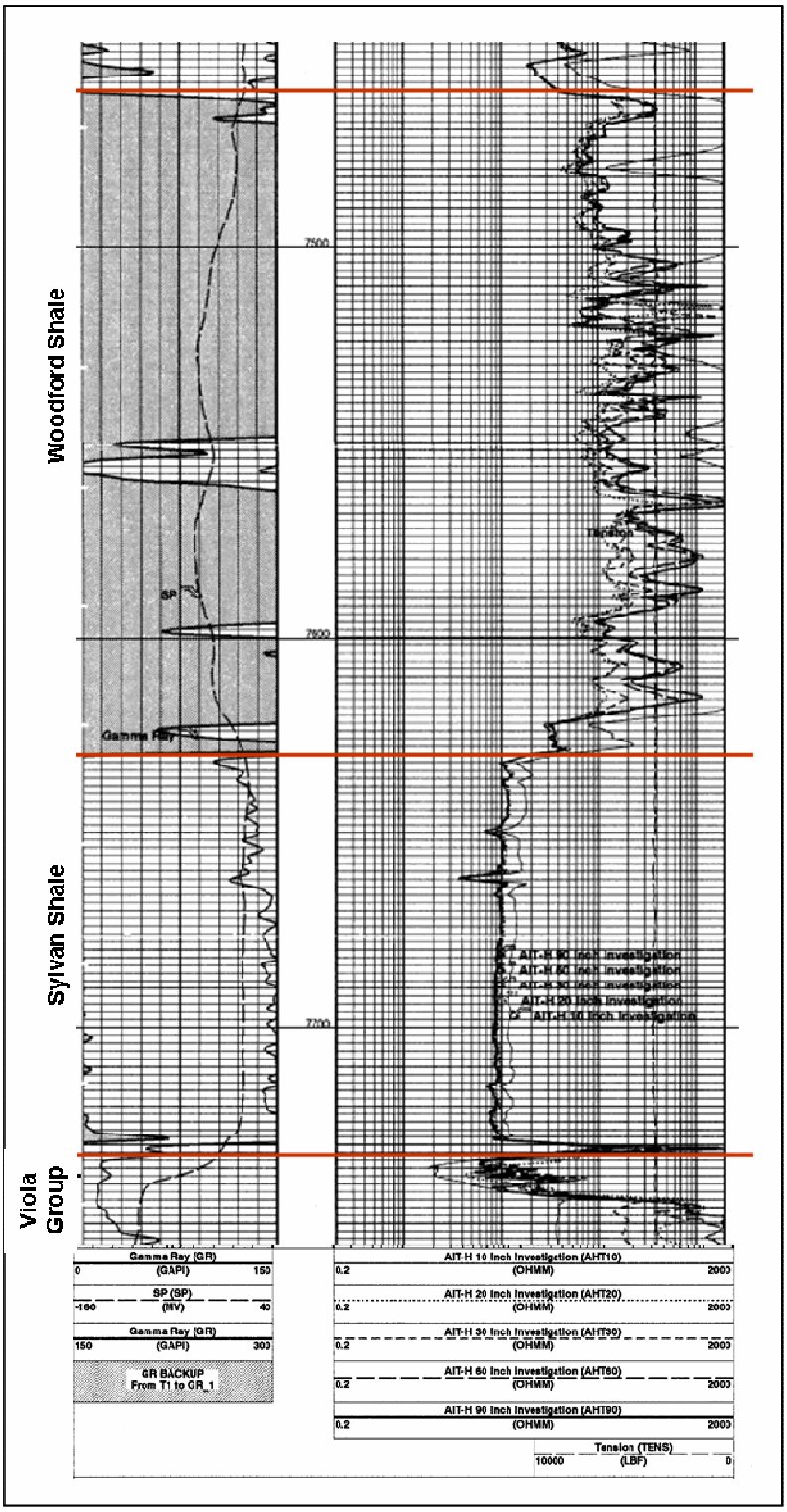


Figure 4**.** Example of Woodford Shale resting on Sylvan Shale due to complete erosion of Hunton Group. Gamma-ray and resistivity wireline log section from Devon Double 5 Ranch No. 1-18, located in Section 18, T.3N., R.11E., Coal County.

Methodology

This study is entirely based on geophysical-log measurements of the Woodford Shale. Wireline well logs are the most readily available dataset for subsurface investigation, and thousands of logs were available from industry sources, as the Arkoma basin is a well-established gas-producing basin. The Woodford was identified in 702 wells (Plate 8) and stratigraphic units were established in 412 of these (well-by-well picks listed in Appendix B). This recognition of stratigraphic boundaries allowed for basin-wide mapping of the Woodford structure, thickness, and extents of individual stratigraphic units. Wireline log measurements were collected on a subset of 82 wells scattered throughout the basin, with a majority focused in the core area of the Woodford play, as this area contains the best collection of modern well logs for the Woodford interval. Cores inherently provide more detailed information, but most existing cores are proprietary holdings of the major participants in the Woodford play.

Mapping the Woodford's gross thickness is greatly facilitated by the formation's distinct gamma-ray character (Figure 5). The Woodford is enriched with uranium, which is the driving constituent for its total radioactivity (Krystyniak, 2005). The relative abundance of uranium, thorium, and potassium are evident on spectral gamma-ray logs (Figure 6). The top of the Woodford is characterized throughout much of the basin by a 'transitional' contact with the overlying Mississippian shales and limestones (Dennis, 2004). Correlation of the gamma-ray signature with resistivity and density values allows for a consistent determination of the top of the Woodford.

Beyond picking the total shale interval, the informal stratigraphic units that compose the Woodford were also identified. The Woodford Shale is traditionally

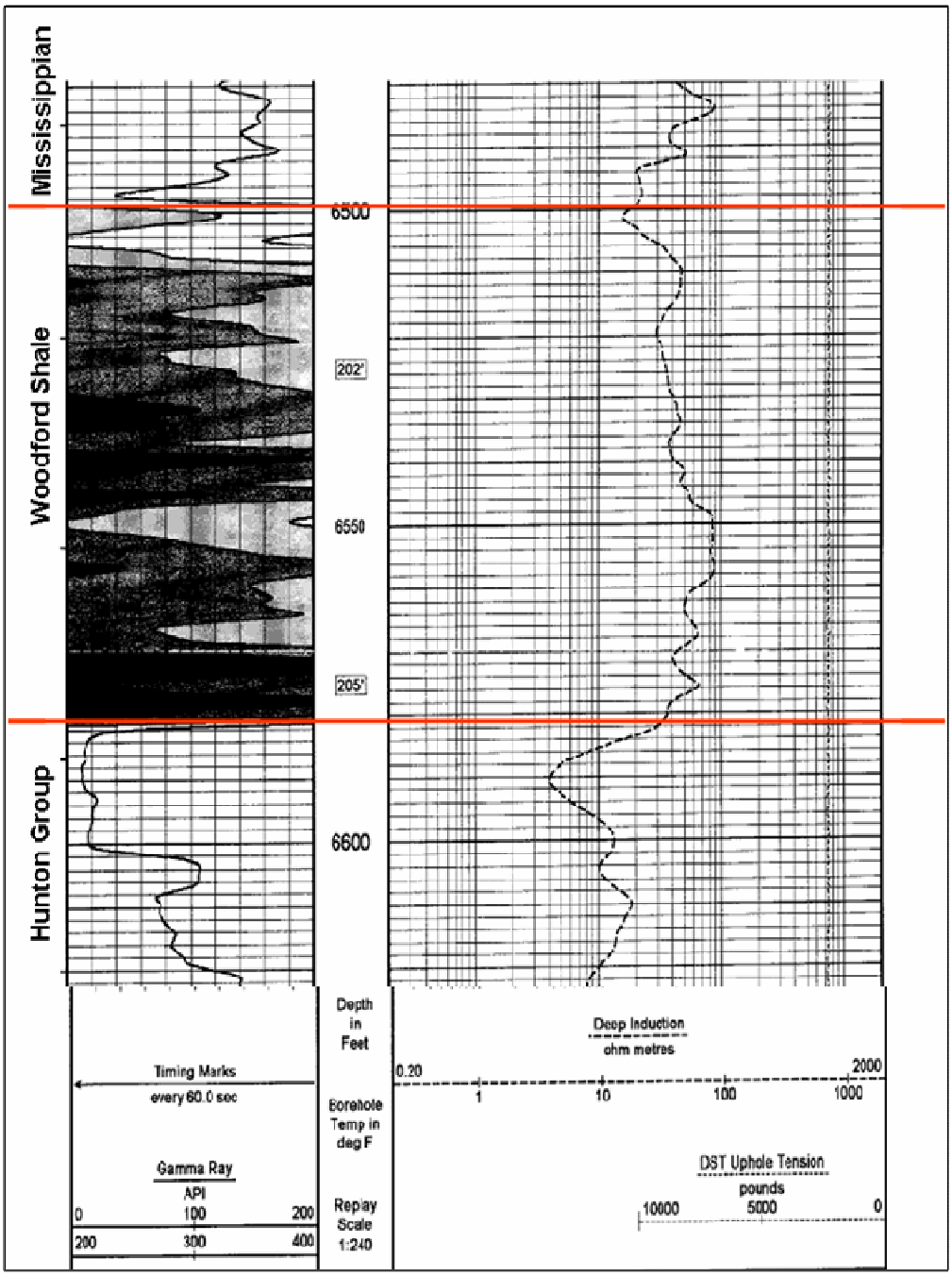


Figure 5. Induction well log section of the Woodford Shale from the Chesapeake, London No. 1-31, located in Section 31, T.7N., R.14E.

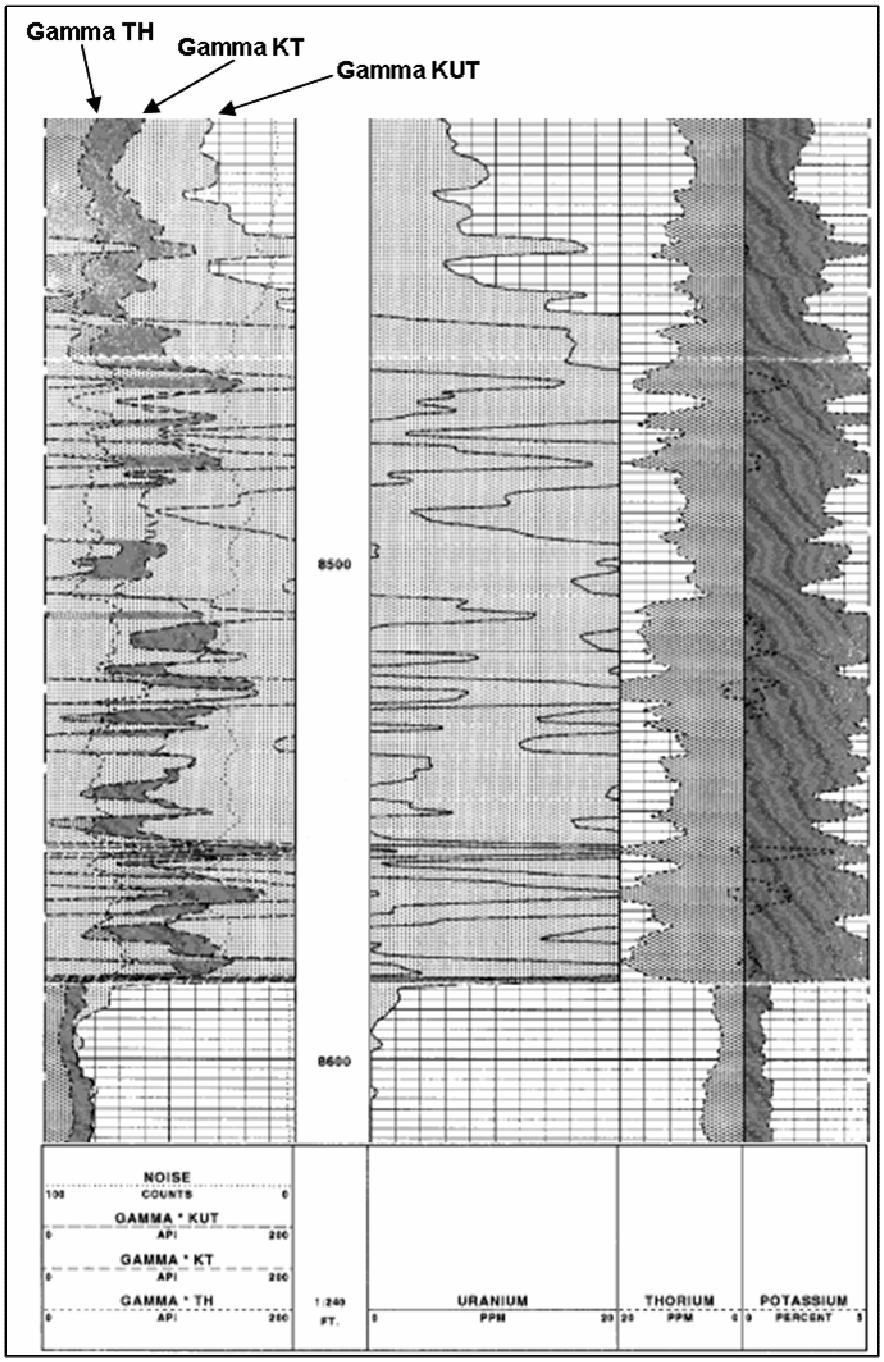


Figure 6. Spectral gamma-ray log section from the Newfield Exploration, Robbie G. No. 1-34, located in Section 34, T.5N., R.12E. Note the similarity between the uranium curve and total gamma content curve (KUT, left side of depth track), which illustrates that uranium is the driving radioactive constituent.

subdivided into three units (Hester et al, 1990) that are readily identifiable from interpretation of resistivity and gamma-ray signatures. As this is strictly a log-based interpretation, it is important to note that this mapping method is based on the author's hypothesis that three distinct units are visible on well logs of the Woodford interval. Despite the ease with which the Woodford can be identified from its distinct log signatures, picking the stratigraphic units requires a greater level of confidence provided by better quality (modern) logs. This ruled out many older wells that lacked distinctive signatures and wells that terminated in the Woodford and did not drill into underlying strata.

Further Methods of Investigation

An important hypothesis regarding hydrocarbon generation is that as hydrocarbons are generated within source shales, formation water is displaced from the shale (Selley, 1998). The typical "gas-effect" response on a porosity log does not usually occur in shales as a result of the tendency of the neutron-porosity tool to be affected by bound water. One method used in industry for a "quick-look" analysis of gas shales is to generate synthetic seismic logs from resistivity using the Faust equation and from bulk density using the Gardner equation, and plot the two logs together (Core Labs, 2007). The two synthetic curves compared in this study provide a decent qualification, but not quantification, of gas in gas-shales. This comparison is shown in Chapter 4.

CHAPTER III

ELECTROSTRATIGRAPHY AND THICKNESS

Electrostratigraphy

The three units of the Woodford Shale were identified primarily from induction resistivity and gamma-ray curves. The basis for subdividing the Woodford was the consistent recognition of three distinct resistive packages within the total resistivity signature across the interval (Table 1). These packages tend to correspond with gamma-ray variation, so having both curves for a particular well is useful for correlation. Based on induction resistivity logs, the Woodford is consistently observed to possess an upward-decreasing resistivity character throughout the study area.

Average resistivity of the Woodford section varies greatly throughout the basin and is observed to range from 10 to 250 ohm-m. Despite this marked variance in resistivity values, recognition of each unit's profile is possible over vast areas. The continuity of log signatures suggests that there is merit in dividing the Woodford Shale in this manner. Of the three packages, the resistive character of the lower Woodford is more difficult to broadly characterize due to its greater variation in thickness and distribution (Figure 7). The resistivity profile of the middle Woodford is the most consistent and usually exhibits upward-decreasing character (Figure 8). The upper Woodford tends to be the least resistive of the three and is separated from the middle

Woodford by a break in resistivity. The upper Woodford typically displays sharply decreased resistivity values compared to the underlying middle Woodford and overlying Mississippian strata (Figure 9). This distinct break in resistivity can be helpful in determining the top of the Woodford when several high gamma-ray value stringers are present in the overlying Mississippian strata.

Unit	Resistivity Signature	Gamma-ray Signature	Average Gamma-ray (in study area)
Upper Woodford	Blocky with pronounced break at base	Increasing gamma values toward base	305 API
Middle Woodford	2 to 3 higher resistivity segments separated by lower resistivities	Alternating high and low gamma values for this interval (spiky)	416 API
Lower Woodford	Arcuate in middle, lower at top and base	More continuous high gamma magnitude	431 API

Table 1. Observed characteristics of each informal stratigraphic unit.

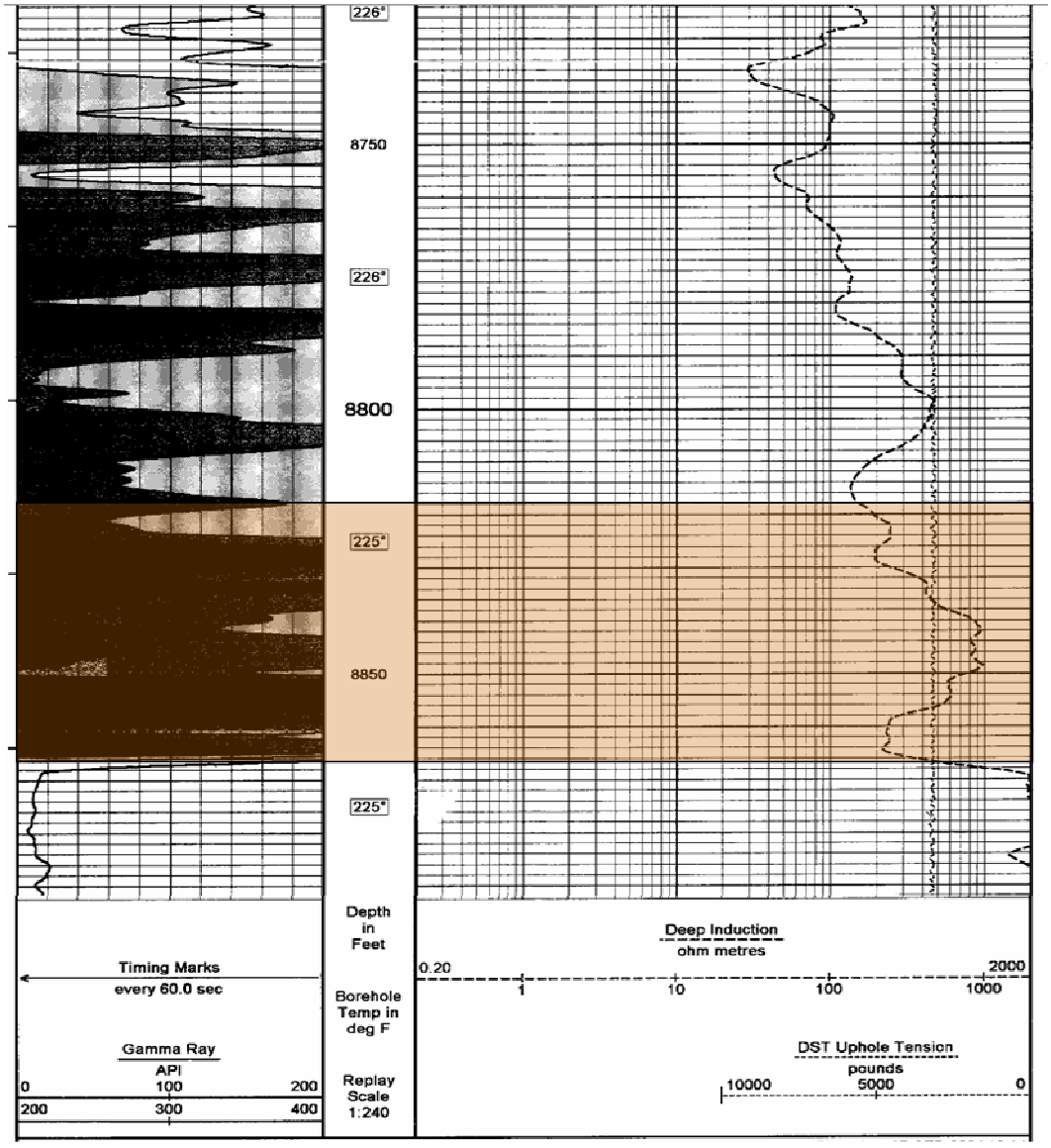


Figure 7. Induction resistivity log from Newfield Exploration Stark No. 2-4, Section 4, T.5N., R.13E., with lower Woodford unit highlighted. The lower Woodford unit is characterized by relatively high gamma values (430 API average) with minimal difference between high and low values. Resistivity is arcuate shaped with higher values in the middle.

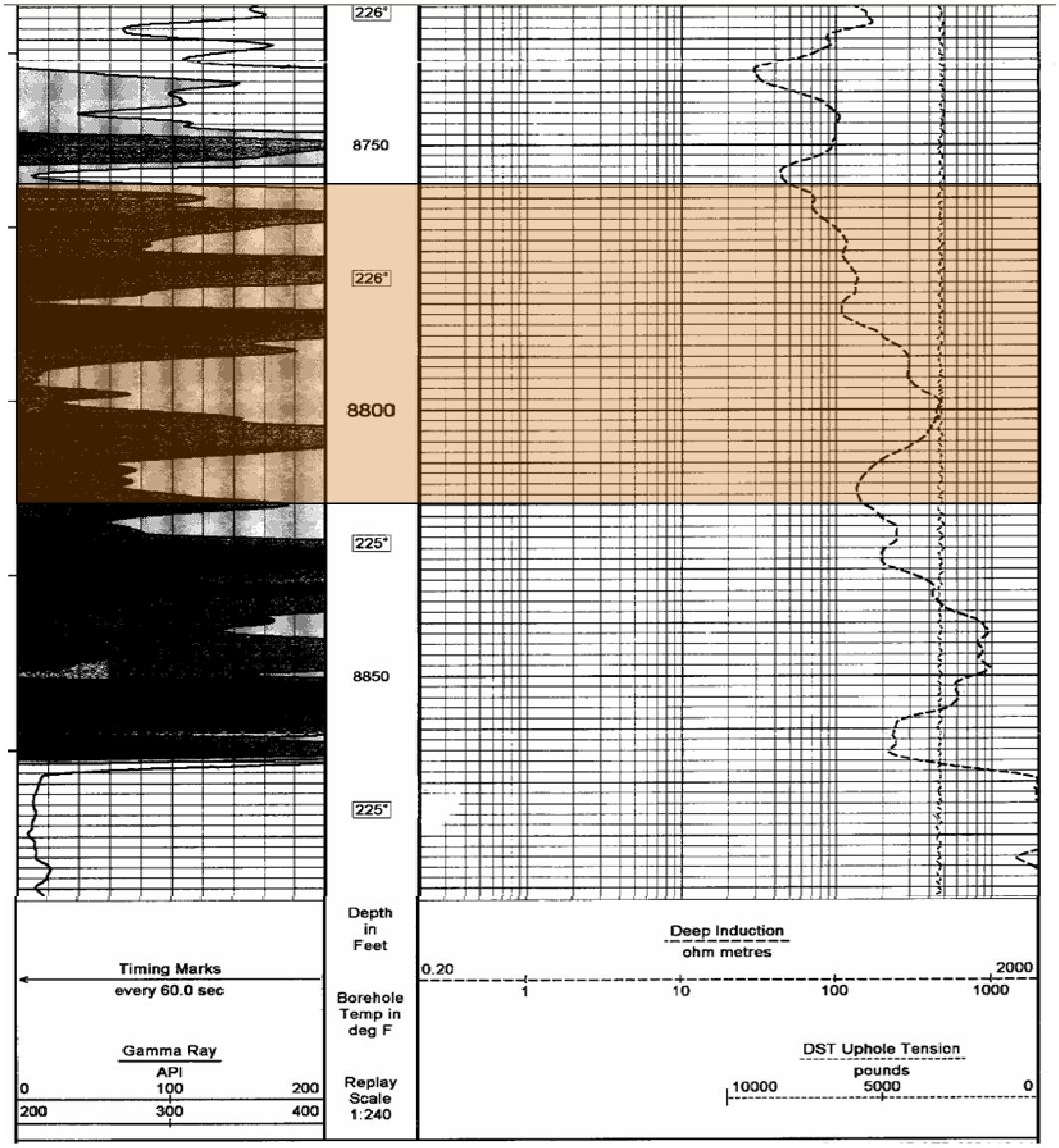


Figure 8. Induction resistivity log from Newfield Exploration Stark No. 2-4 with middle Woodford unit highlighted. The middle Woodford unit is characterized by highly variable gamma-ray values (416 API average). The resistivity profile has 2 to 3 higher resistivity segments separated by lower values.

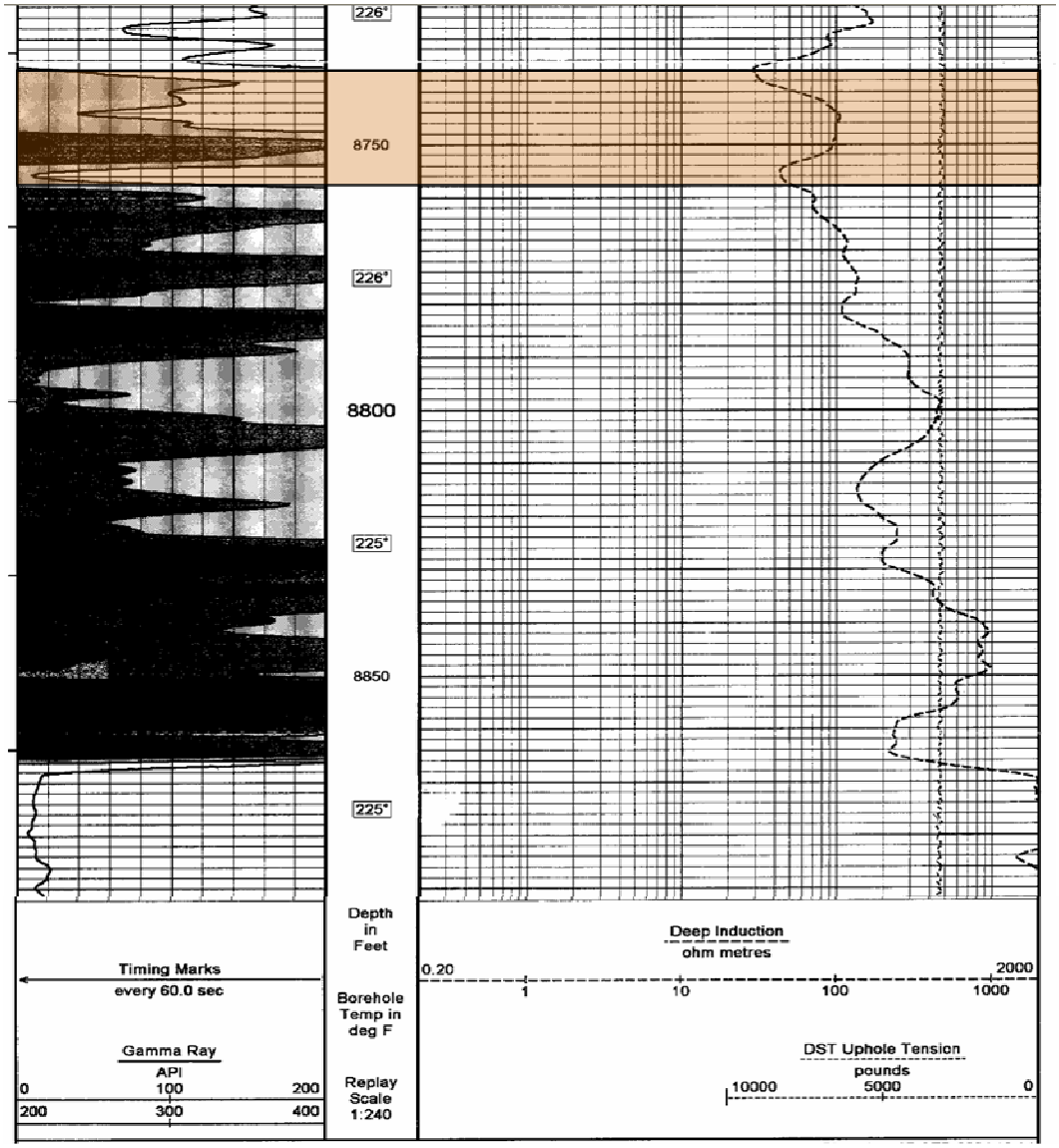


Figure 9. Induction resistivity log from Newfield Exploration Stark No. 2-4 with upper Woodford unit highlighted. The upper Woodford unit is characterized by downward increasing gamma-ray values (305 API average). Resistivity tends to be blocky with pronounced breaks at top and base.

Significance of Hunton Group Thickness

Previous studies have illustrated the inverse relationship of Woodford thickness to underlying Hunton Group thickness. The ideal thickness response between these two formations is only applicable in certain portions of the basin. A basin-wide comparison shows just how poorly the two thicknesses compare (Figure 10). Because regional tectonism and localized folding and faulting modified the pre-Woodford surface prior to and possibly concurrent with Woodford deposition, Hunton Group strata can be almost completely removed (Hunton Group Thickness map in Plate 9). As a result, thin Woodford commonly overlies relatively thin Hunton Group remnants in northern portions of the basin (S-N cross-section in Plate 10). Likewise, some areas in which the Hunton Group was not as significantly removed would later become deeper portions of the Oklahoma basin prior to or during Woodford deposition. In this case, thick Woodford sections, often containing all three intervals, are observed to overlie thick Hunton Group.

It was discovered that Woodford and Hunton Group gross thicknesses from Coal County did display an excellent inverse relationship, despite the lack thereof basin-wide (Figure 11). In this part of the basin, total Woodford thickness is consistently inversely proportional with Hunton Group thickness. Dennis (2004) determined that the lower Woodford unit should behave in this manner, as it is interpreted to have filled in the lows created by pre-Woodford erosion. This comparison of the lower Woodford unit to Hunton Group thickness holds true for the well-logs examined from Coal County as well (Figure 12).

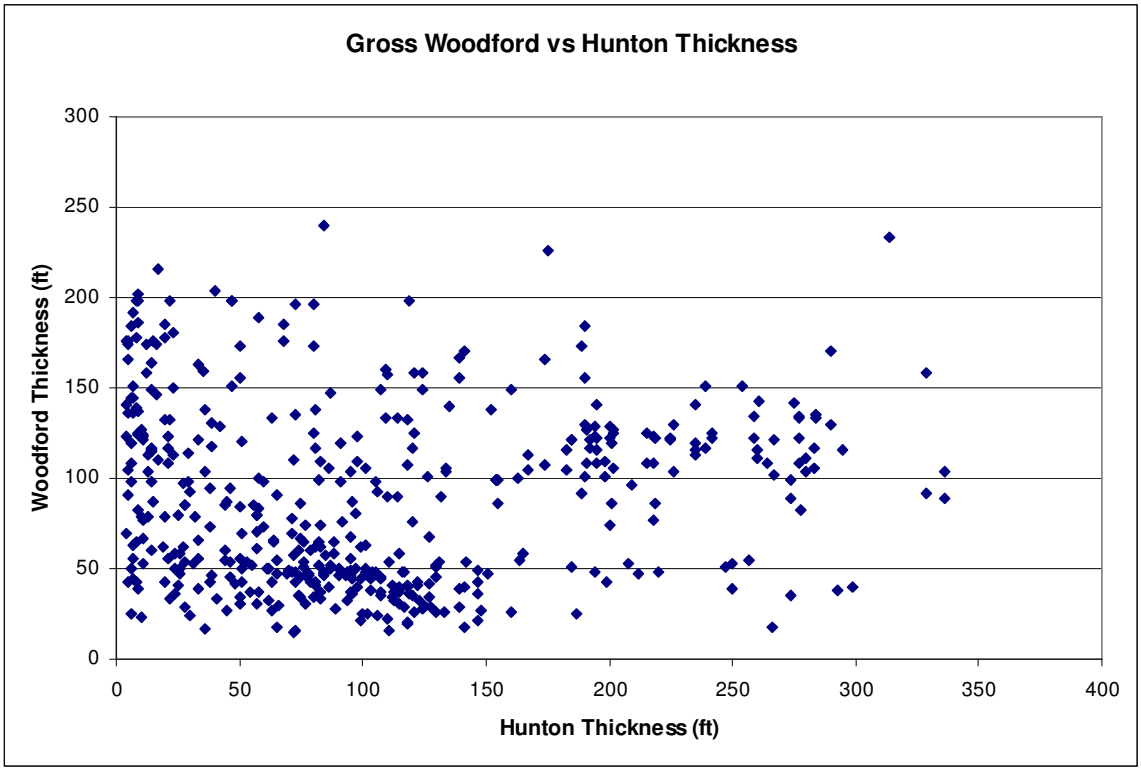


Figure 10. Basin-wide comparison of total Woodford Shale versus gross Hunton Group thickness.

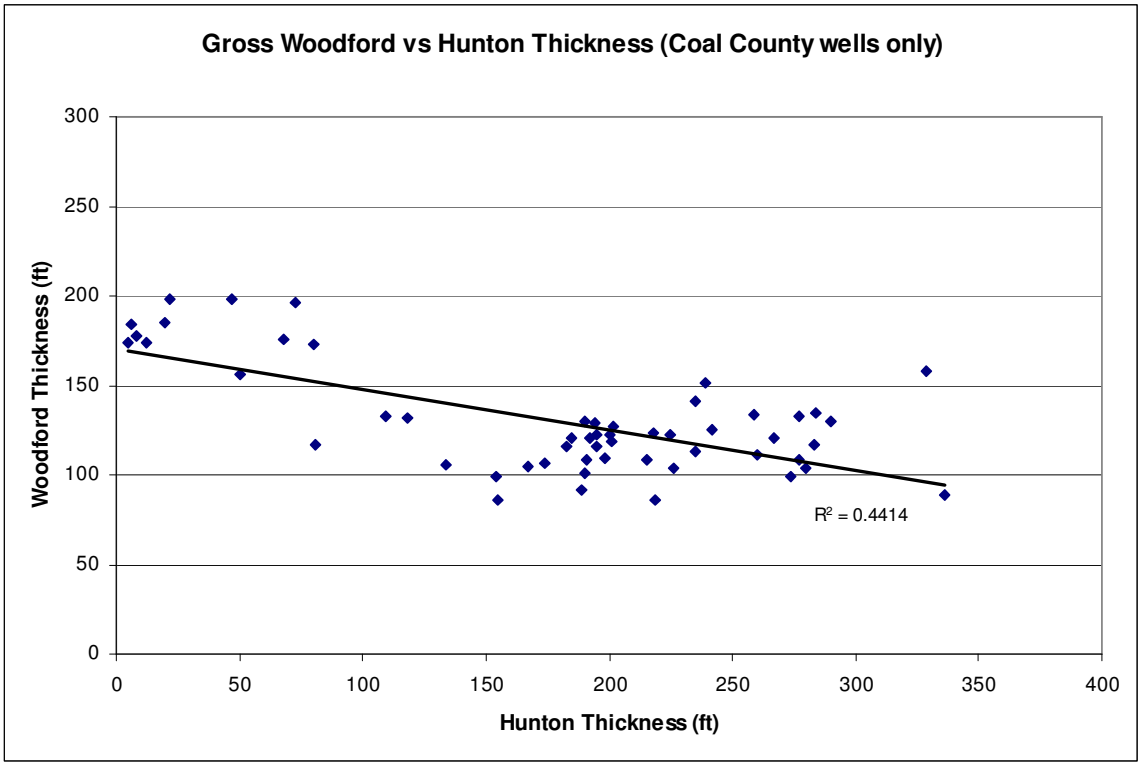


Figure 11. Comparison of total Woodford and Hunton Group thicknesses in wells from Coal County. Note the inverse trend of thicker Woodford atop thin Hunton Group as well as the converse.

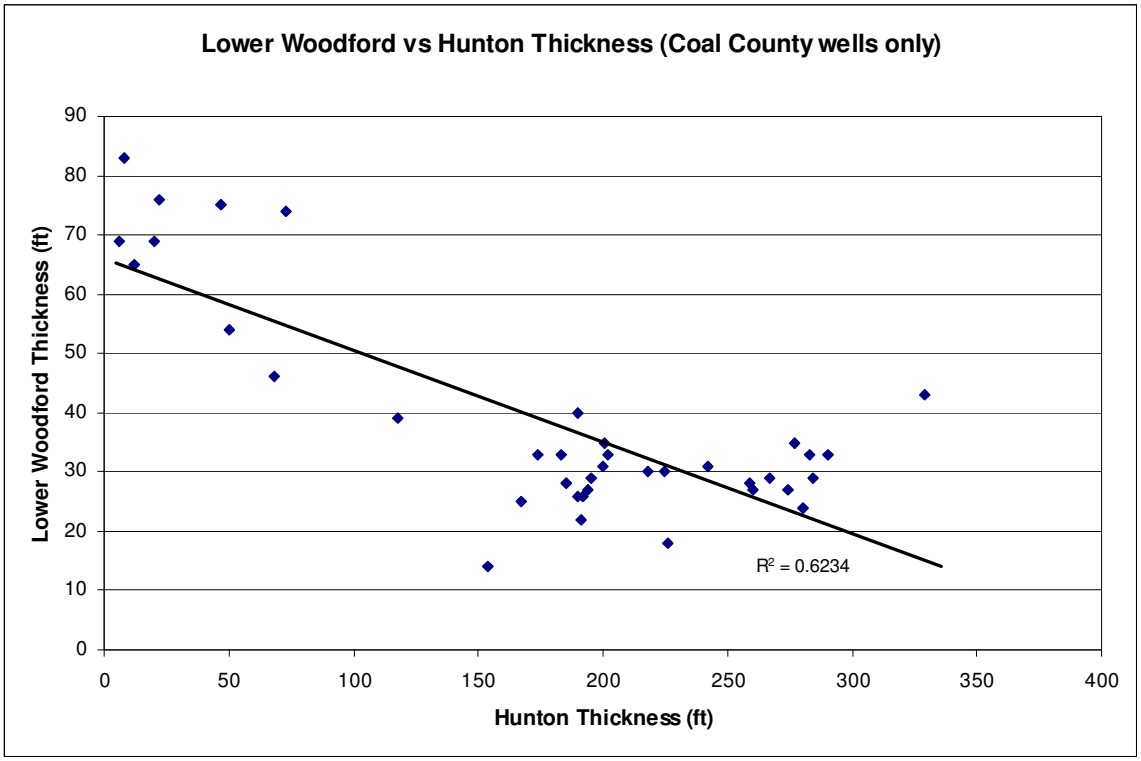


Figure 12. Comparison of Lower Woodford and Hunton Group thickness in Coal County. The inverse proportionality is more pronounced than the total Woodford to Hunton Group comparison.

Total Woodford Thickness

Total Woodford shale thickness in the study area ranges from 15 feet in northern portions of the basin to as thick as 240 feet in the southwest, with an average observed thickness of 84 feet (Plate 12). Two main depocenters are apparent from the gross Woodford isopach. One is located in western Hughes County and another in northern Atoka, southern Pittsburg, and eastern Coal Counties. Woodford total thickness is in excess of 200 feet thick in these two regions. The Woodford structure map (Plate 13) indicates that the Woodford ranges from sub-sea depths of 2,000 to 12,000 feet in the Arkoma basin.

Lower Woodford Thickness

The lower unit is markedly absent in much of the shallower portions of the basin (see Plate 14) presumably due to onlap onto a paleoshelf. The lower unit ranges from 0 (absent) to 95 feet thick with an average thickness of 32 feet. The thickest lower Woodford interval is within the southern Woodford depocenter in T.2N., R.12E. Thickness in excess of 90 feet is observed in this portion of the Arkoma basin, whereas the lower unit is 70 to 80 feet thick within the depocenter in Hughes County. The lower unit's variance in thickness is observed to display the strongest correlation with Hunton Group thickness, and this tendency is most clearly illustrated in southern portions of the Arkoma basin, such as in Coal County (see Plate 15 for cross-section). Because the Woodford is interpreted to have been deposited during a transgressive event from the south, it follows that the thickest lower Woodford sections would fill topographic lows on

the highly eroded Hunton Group surface. It is interpreted that syndepositional tectonics altered the unconformity surface upon which the Woodford was deposited such that an inverse thickness relationship is obscured throughout much of the Arkoma basin. The lower Woodford unit thins roughly to the north and its updip limit occurs around T.7N. to T.8N., as north of this area the unit is absent from the Woodford section.

Middle Woodford Thickness

The middle unit was determined to be the thickest and is characterized by higher gamma-ray and resistivity measurements than the upper unit (Table 1 and Figure 8). It is discernable from the upper and lower units by a distinct break in resistivity (on the order of 30 to 50 ohm·m) in addition to gamma-ray variation. In the Arkoma basin, the middle unit ranges from 0 (absent) to 119 feet thick with an average thickness of 42 feet. Thinning occurs primarily to the north (see Plate 17) and the middle unit is notably absent in northern portions of the basin. This thinning and absence may represent thinning onto the paleoshelf. The middle Woodford was preferentially deposited in the Woodford depocenter located in Hughes County (T.5N., R.8 and 9 E.). Because the lower Woodford unit had the tendency to fill in Hunton Group lows, the middle Woodford does not display a marked proportionality with Hunton Group thickness.

Upper Woodford Thickness

The upper unit's transitional nature into several thin, high gamma-ray value streaks (150+ API units) and the higher gamma readings in the lower Mississippian can

make determining a definitive Woodford top difficult. Resistivity and density logs were used in conjunction with gamma-ray to ensure a consistent pick of the Woodford top across the study area. The upper unit of the Woodford is interpreted to be ubiquitous and only moderately variable in thickness throughout the basin, ranging from 5 to 60 feet thick with an average thickness of 29 feet (Plate 18). The upper unit tends to thicken slightly over the Woodford depocenters and also exceeds thicknesses of 40 feet in northeast Pittsburg and western Haskell County.

Significance of Mapping to Woodford Play

Explicit economic significance of each unit is difficult to ascertain from distribution patterns alone. It has been determined that upper portions of the Woodford Shale contain interbedded chert layers (Krystyniak, 2005), which provide a brittle, competent zone in which induced fractures are more likely to propagate and persist. Induced fractures are difficult to maintain in fissile layers as they tend to heal or fail to propagate due to the ductile behavior of the rock. Although the upper unit contains lithologies known to enhance induced fractures, the ubiquitous nature of the upper unit suggests that it alone is not a determining factor for productive Woodford Shale.

It has been noted that the lower-most unit of the Woodford is absent throughout much of the northern region of the basin. Although the direct significance of its absence to economic production is not completely known, the result of this research suggests that it is an important component to an economic Woodford well. Considerable volumes are published correlating both gamma-ray and bulk density to organic content, and using these two parameters as a guide, the lower unit would appear to be potentially rich in

organic material. Logically, the more organic-rich intervals stacked in a Woodford section, the greater the amount of potentially generated and stored hydrocarbons.

A thicker Woodford section could also reduce complications with well completion, as induced fracture behavior can be difficult to control. One concern with Woodford fracture treatments is that the fractures can spread out of the shale into the underlying Hunton Group. This can be detrimental to production if the Hunton Group contains significant volumes of water, as production can be slowed or halted by water entering the formation (Maughan, 2006).

An important implication of understanding Hunton Group distribution is that finding areas in which the Hunton is absent could be beneficial both to the Woodford's ability to retain internally generated hydrocarbons and to simplifying Woodford completions. In areas where the Woodford overlies the Sylvan Shale it would follow that being bound by lower permeability carbonates and shale above (Caney Shale) and shales below would help contain gas within the Woodford. If the Viola Group lacks porosity in regions where the Sylvan Shale was also eroded, the Viola could act as a better bounding seal than the Hunton Group. It should be noted that not every formation within the Hunton Group contains significant porosity in the Arkoma basin, so Woodford underlain by Hunton Group is not necessarily detrimental.

CHAPTER IV

PETROPHYSICAL PROPERTIES OF THE WOODFORD SHALE

Introduction

Various log curves (GR, bulk density, density porosity, and deep resistivity) were digitized for 82 wells for inter-well correlation purposes and intra-Woodford comparison on a foot-by-foot basis. Average basin-wide characteristics were then determined based on this collection of digitized data. Investigation of log-measured characteristics was narrowed down to this smaller dataset (82 wells) due to availability and quality of log-curves of interest. Gamma-ray curves act as an excellent correlation tool, but can be difficult to acquire in areas without modern development. Gamma-ray curves with multiple stages of scale-change are difficult to find as well, as many gamma-ray logs are set to cut off display at an arbitrary value, commonly 300 to 400 API. When highly radioactive spikes (greater than 300 to 400 API units) are not visible, the log is of little use for correlation or data gathering. Density logs are also of interest but they too can be limited by the vintage of the well.

Crossplots of gamma-ray and bulk density resulted in highly scattered distributions with only weak inverse correlation (Figure 13). In general, high gamma-ray values are observed to correspond with high density portions of the shale and low gamma-ray values occur with low density measurements. An examination of the

comparison between gamma-ray and bulk density for individual wells suggests that multiple populations may exist in the Woodford Shale (Figure 14). The inherent problem with applying this technique in the Woodford Shale is that gamma-ray intensity is apparently not a reliable indication of organic content (Aufill et al, 2006). Despite this inconsistency, lower densities observed in southwestern portions of the basin along with progressively higher resistivities still suggest that the Woodford is possibly more organic rich or contains more hydrocarbons than in areas of higher density and lower resistivity even if a quantitative relationship cannot be determined.

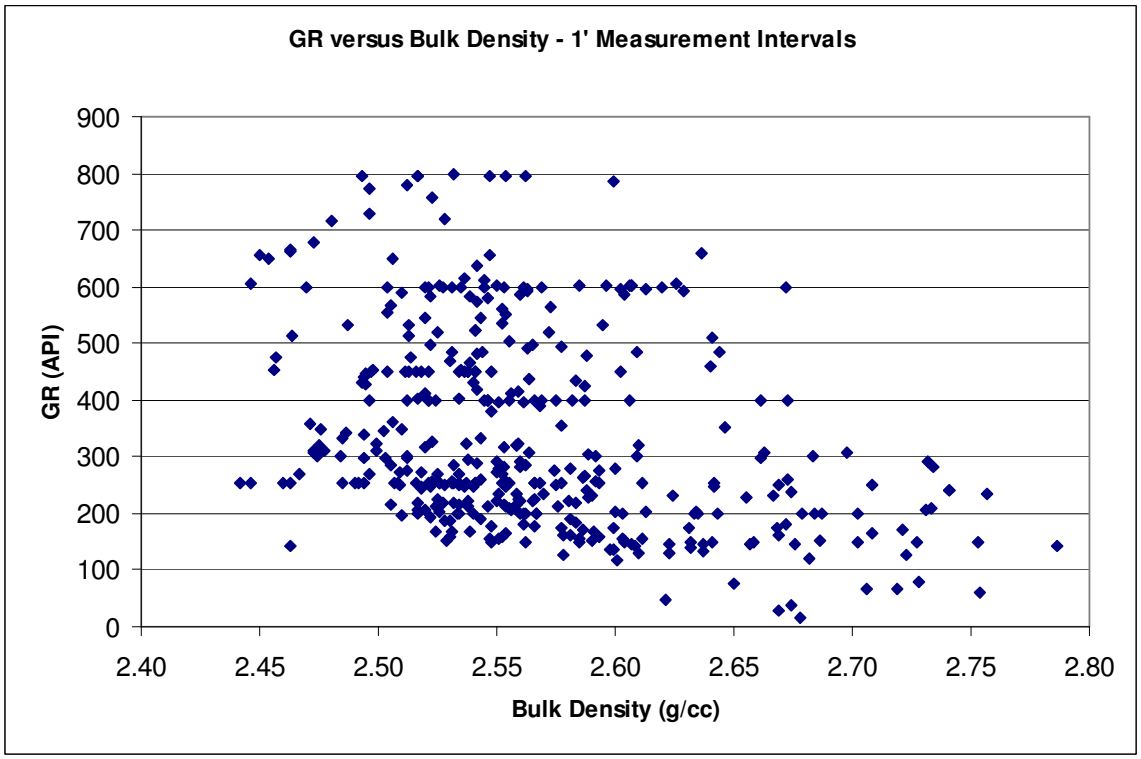
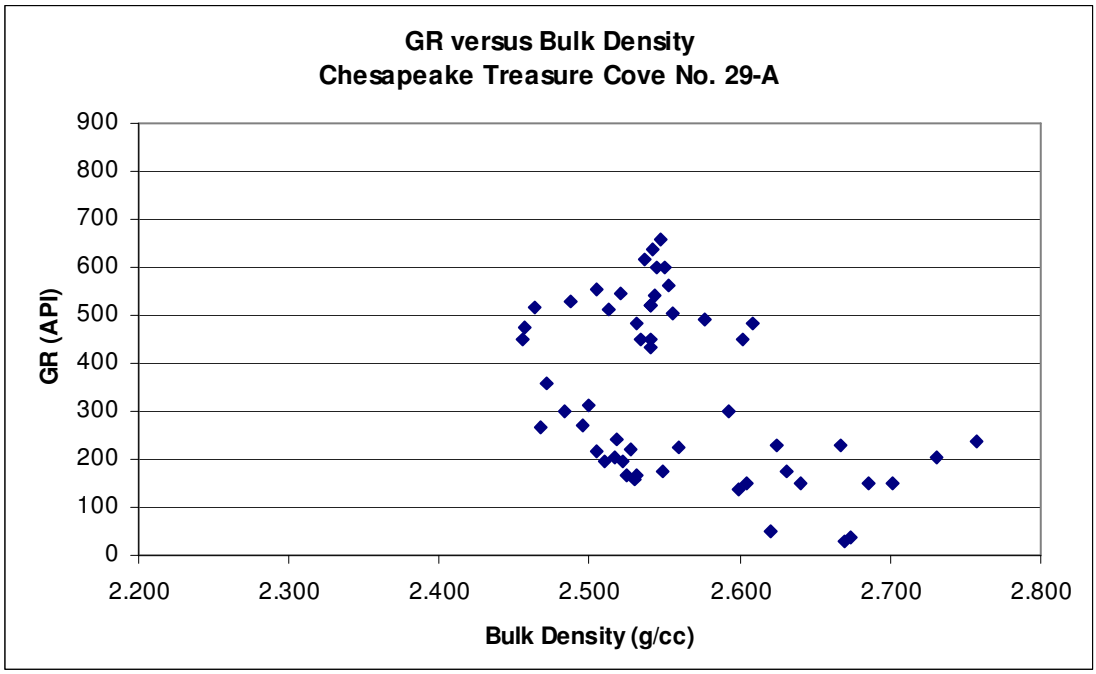


Figure 13. Gamma-ray plotted against bulk density, both digitized from logs at one foot intervals. Six wells were used for this plot. Although a slight inverse relationship may be interpreted, data are scattered.



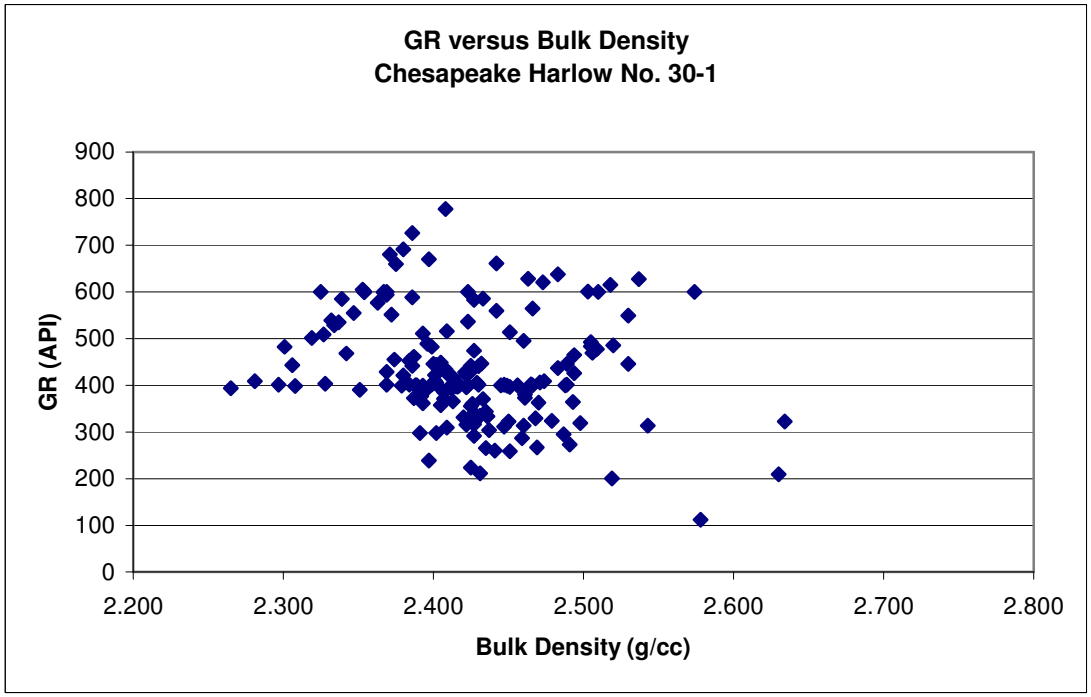


Figure 14. Gamma-ray plotted against bulk density for the Chesapeake, Treasure Cove No. 29-A**,** Section 29, T.9N., R.18E., Haskell County and Chesapeake, Harlow No. 30-1, Section 30, T.4N., R.12E., Pittsburg County. Interestingly, lower densities are observed for Woodford located in the southwestern portion of the basin.

Total Woodford Characteristics

Gross porosity and bulk density values were determined by examining logs from 82 wells. Average density-porosity for the gross Woodford section is 12.8%, an uncorrected measurement from porosity logs run on a limestone matrix (2.71 g/cc). Average bulk density for the Woodford Shale in the study area is 2.49 grams/cc.

Lower Woodford Characteristics

Gamma counts range from 190 to 731 API units in the lower Woodford with an overall average magnitude of 431 API units (based on 38 wells). The wide variance is likely partially the result of logging tool inconsistencies. As with the middle unit, resistivity commonly remains above 100 ohm-m throughout the entire lower unit, with peaks above 1000 ohm-m. This extremely high resistivity is thought to represent saturation by internally generated hydrocarbons. Correspondingly, the lower unit also has the lowest density of the three units, averaging 2.45 g/cc.

Middle Woodford Characteristics

The middle unit often contains the 'hottest' gamma-ray streak within the Woodford, although the lower unit features high gamma-ray counts as well. Average gamma-ray counts for the middle unit (based on 62 wells) range from 210 to 680 API units with an overall average of 416 API units. Although gamma-ray logs are inherently suspect for quantification purposes, gamma counts of nearly 1000 API have been

observed in southwestern portions of the Arkoma basin in the middle unit. Average density for the middle unit is 2.50 g/cc.

Upper Woodford Characteristics

Along with lesser thickness, the upper unit also has lower gamma-ray counts than the other two units, with a calculated unit average of 305 API units (based on 70 wells). Gamma-ray intensity, on average, ranges from 126 to 526 API units. In addition to lower radioactivity, the upper unit is also distinguished by lower resistivity values, which possibly correspond with a leaner TOC content. Possibly fewer hydrocarbons were generated or stored in the upper unit, keeping resistivity values lower than the rest of the formation. Bulk density also points to this possibility, as the upper unit is the densest of the three, with an average density of 2.51 g/cc.

Defining Limits of Economic Potential

An important factor for defining the limits of economic Woodford Shale development in the Arkoma basin is the thermal maturity of the shale. Although vitrinite reflectance is the commonly accepted measurement of thermal maturity, Schmoker and Hester (1990) have proposed that deep-induction resistivity measurements can be used as an indicator of the presence of hydrocarbons within the Woodford Shale. This serves as a favorable surrogate measurement, since the theory behind vitrinite reflectance makes some measurements inherently inaccurate (Cardott 1994). Of possible significance to the

Woodford play is the presence of major gas reserves in the Arkoma basin in rocks thought to be overmature (Houseknecht et al, 1992).

Shales tend to be conductive due to their water content, so a typical shale response on a resistivity log is that of a shale "base-line" curve of low resistivity values. Theoretically, as hydrocarbons are produced in a source rock, water is expelled from the formation and the pores become saturated with hydrocarbons, which leads to an increase in resistivity. Schmoker and Hester (1990) determined that a formation resistivity of 35 ohm-m corresponded with the onset of internally generated hydrocarbons in the Woodford Shale of the Arkoma basin as well as in other equivalent source shales. Resistivities would then theoretically climb toward infinity as hydrocarbon generation and storage continued. Formation resistivity values in the Arkoma Basin range from less than 20 to beyond 500 ohm-m on average through the entire Woodford section (see Plate 19). One explanation for the increased resistivity would be that the shale has lost much of its original water content due to the generation of hydrocarbons.

Moving north and east from the core area it is observed that Woodford resistivities decrease. Of concern is the resistivity of the Woodford in northern portions of the Arkoma basin, in which values range from below 20 to 35 ohm-m. These values would suggest that the boundary of thermally generated hydrocarbons runs through portions of northern Hughes and Pittsburg counties as well as southern McIntosh and Haskell County. Using resistivity as a guide places doubt on economic development of thermogenic gas from the Woodford in the northern portions of the basin.

Petrophysical Properties

Understanding the resistivity and density characteristics of the Woodford lends confidence to the assumption that gas content can be identified with Faust and Gardner equation-derived sonic logs. The Faust equation generally equates high resistivity with 'tight' rocks, such as limestones and low-porosity sandstones and a fast interval velocity (low interval transit time) is calculated for high resistivity values. Similar assumptions are made for the Gardner equation. Tighter, highly cemented rocks tend to be of higher bulk density than those with significant porosity, and as such, higher bulk densities calculate faster interval velocities (low interval transit times). Since a rock's porosity is filled with either gas or liquid, both of which are usually of lower densities than the surrounding formation, lower rock bulk densities tend to be calculated for porous rocks (Selley, 1998). Low densities, in turn, generate slow interval velocities using the Gardner equation, since fluids would transmit a sonic signal significantly slower than a solid material.

High-resistivity and low-density portions of the rock generate two distinctly different synthetic sonic curves, and the separation can be on the order of 20 to 30 μ-sec/ft. Such synthetic sonic logs were generated for several wells throughout the basin in order to compare results (Figures 15 and 16). Although there is reasonable correlation between sonic crossover footage and production from qualitative observations, it is not clear that this method alone is sufficient to define zones of higher volume production as other rock characteristics and completion techniques obviously influence well performance. An important caveat for this method is the limitation of vertical Woodford production. Vertical wells are required to generate synthetic sonic logs, but vertical

production from the Woodford does not yet appear to be economic. Thus comparisons of crossover footage to production offer limited insight into productive potential because the vertical wells inherently suffer from limited rates.

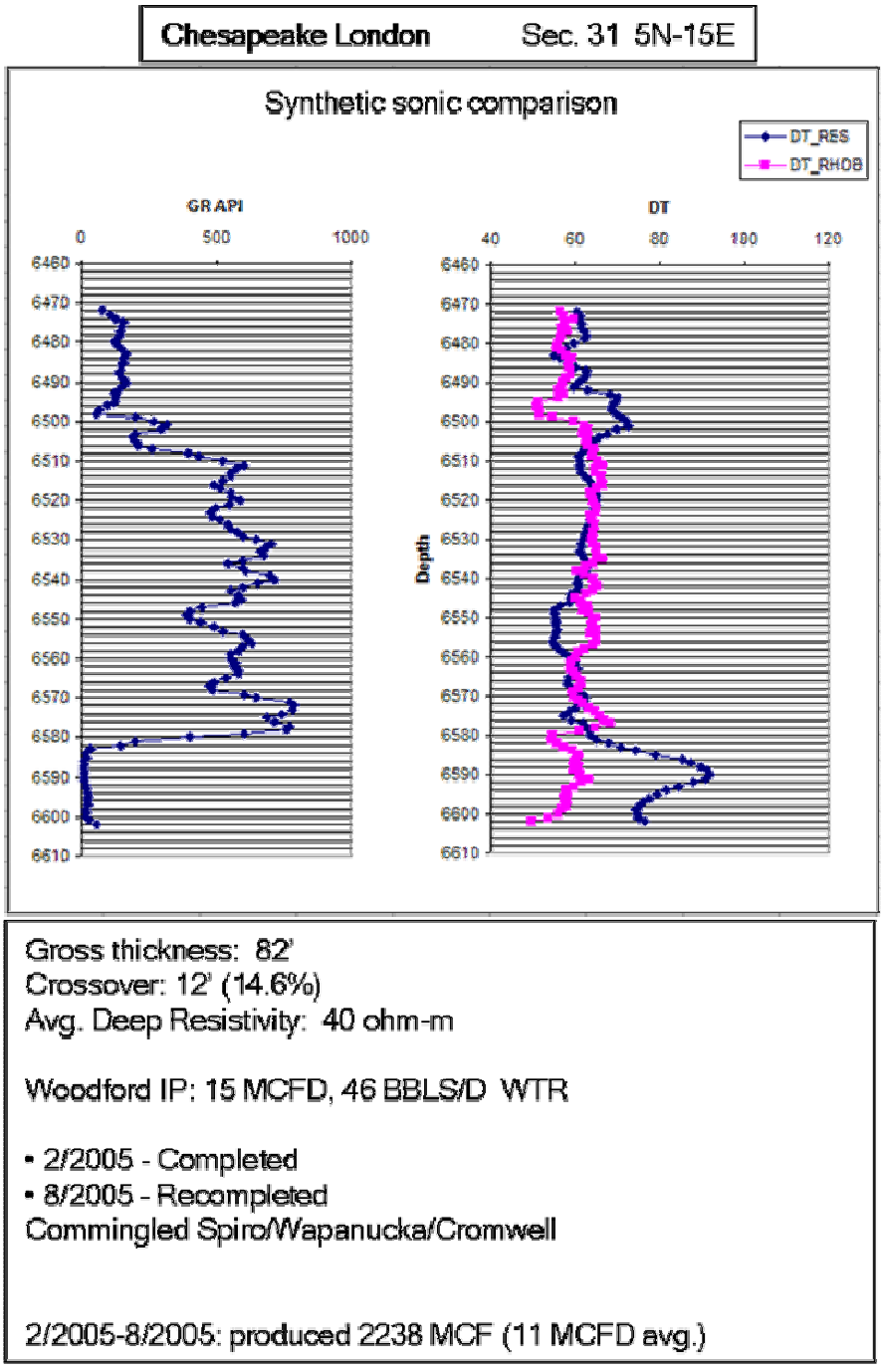


Figure 15. Synthetic sonic curves generated for the Chesapeake London No. 1-31. Note that significant crossover (10+ µsec/ft) only occurs over about 12 feet and Woodford initial potential tests and production were low volume. Second completion report filed indicates that the well no longer produces from the Woodford.

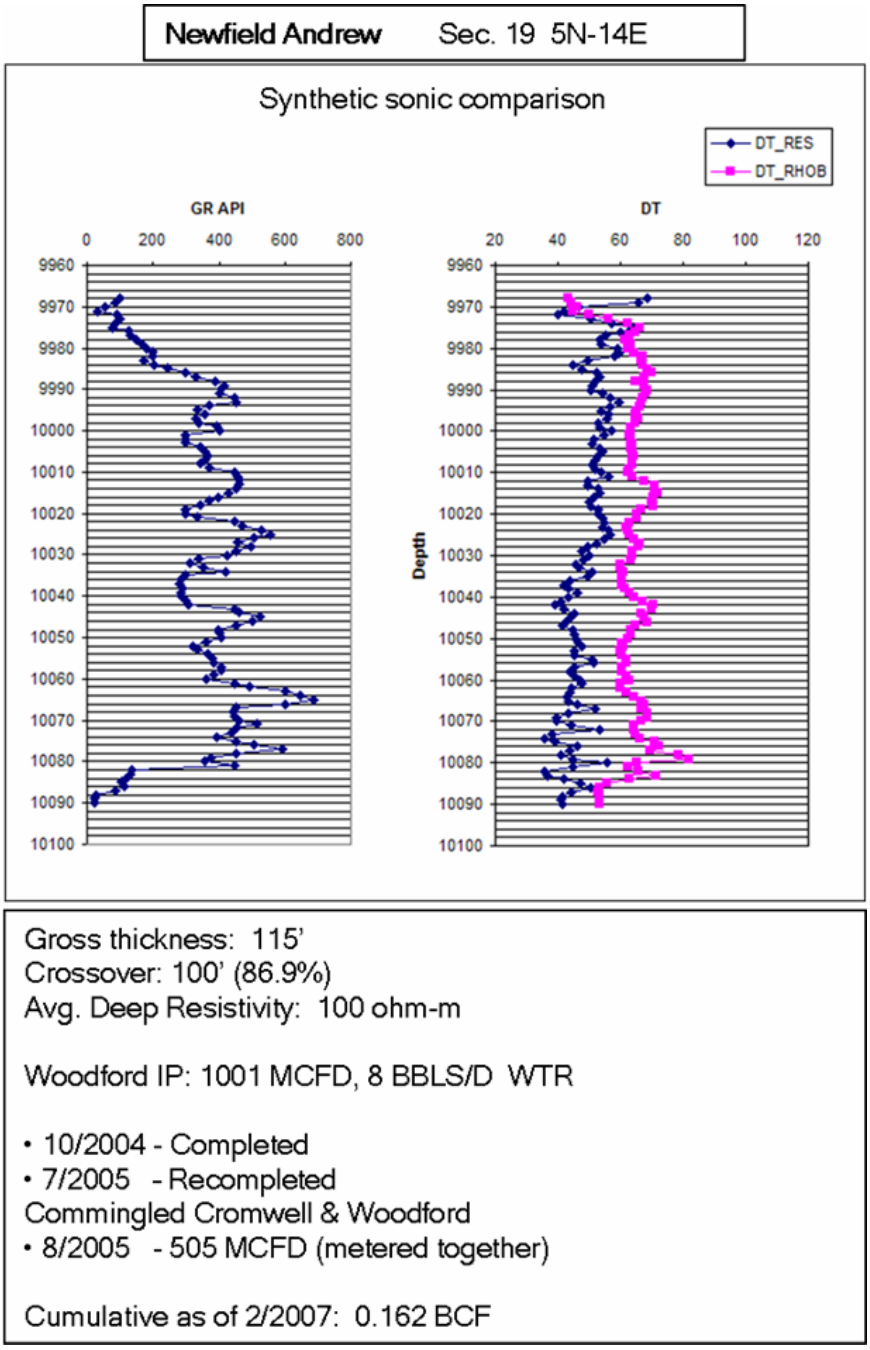


Figure 16. Synthetic sonic curves generated for the Newfield Andrew well. Significant crossover (10+ µsec/ft) spans the entire Woodford section and initial potential tests were accordingly higher volume. It is important to note that few Woodford vertical wells have sustained high rates of production.

CHAPTER V

CONCLUSIONS

Based on the integration of log-derived and production data, the following conclusions were formulated. Four basic questions concerning the Woodford Shale were addressed in this study. 1.) Is it possible to establish the stratigraphic framework from well logs of the Woodford Shale in the Arkoma basin? 2.) What is the distribution of each of the informal stratigraphic units? 3.) Can log-derived characteristics help define the regional extents of economic Woodford shale, and what are the compiled characteristics? 4.) What other analyses are useful in determining economic potential of the Woodford?

Using the foundation provided by previous studies, it was determined that informal stratigraphy could be interpreted from well logs in the Arkoma basin. From this conclusion, the Woodford's three informal stratigraphic units were identified across the basin.

Isopach maps indicate that the upper unit is the least variable in thickness of the three and that the thickness of the lower unit is highly variable due to in-filling of paleo-depressions in the underlying Hunton Group. Accordingly, the thickness of the lower unit is approximately inversely proportional to Hunton Group thickness in southern portions of the basin. All three units tended to preferentially fill similar depocenters in

the western and southern parts of the basin to that of the total Woodford. However, the upper unit had an additional discreet depocenter located in the north-central portion of the basin. The economic significance of each unit's distribution is not readily apparent, although it would seem that the presence of reasonably thick lower Woodford could only be beneficial.

The average thickness of the lower, middle, and upper units in the study area is 32, 42, and 29 feet, respectively. All three units feature relatively high gamma-ray intensity, averaging 431, 416, and 305 API units for the lower, middle, and upper, respectively. Bulk density varies slightly for each unit, ranging from 2.45, 2.50, and 2.51 g/cc in the lower, middle, and upper units, respectively. The gross Woodford Shale section averages 2.49 g/cc throughout the study area. Despite the apparent lack of tight correlation between bulk density and gamma-ray (and presumably TOC) in the Woodford Shale, the result of this study would suggest that the lower Woodford unit possibly has the highest organic content.

Perhaps equally significant to internal characteristics and variations is the Woodford subcrop. The Hunton Group can be a detriment to Woodford production in multiple ways. Significant porosity within the Hunton Group could provide a pathway for considerable volumes of gas to escape from the Woodford. Induced fractures can also be detrimental to Woodford production if they enter an underlying water-wet Hunton Group. For both reasons it would follow that Woodford Shale development should target areas where the Hunton Group was entirely removed by erosion, and areas where the Woodford overlies the Sylvan Shale could be especially promising.

Synthetic sonic log generation and comparison appears to be a promising "quick-look" method for gas-shale evaluation. Although restricted to vertical wells, some correlation between synthetic crossover (between Faust and Gardner curves) and production volumes appears to exist. Certainly this method should not be considered a quantification of gas content, but instead act as a surrogate indication of the presence of gas despite the lack of traditional porosity-log crossover.

Future Work

Future studies of the Woodford Shale in the Arkoma basin would greatly benefit from core analyses. Vertical cores through the entire Woodford section would be extremely valuable in determining the stratigraphic framework of the shale. Also beneficial would be the ability to compare lab-measured petrophysical properties to those measured on well logs. Such research could advance log interpretation of the Woodford Shale. Paleontological information garnered from core studies would also be invaluable in determining the stratigraphic framework of the Woodford. A more in-depth study of Woodford thickness versus Hunton Group thickness could also be valuable for targeting areas for production. Although our understanding of gas-shales is still incomplete, the Woodford play is progressing rapidly and will only benefit from knowledge gained from future stratigraphic and geochemical studies.

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APPENDICIES

APPENDIX A: ALL WOODFORD PRODUCING WELLS

API No.	Operator	Well Name	Well No.	Sec	Twn	Rge	County	Horizontal?	TD	Gross Woodford Thickness (ft)	Woodford Only Cummulative Gas (MCF)	Woodford Commingled Cummulative Gas (MCF)	Zones Commingled with Woodford	Completion Date
35005203190000	ANTERO RESOURCES	CARR ESTATE	12-1H	12	2S	10E	ATOKA	Y	12832		22621			1/3/2007
35029207900000	ANTERO RESOURCES	VAUGHN	25-1H	36	1S	10E	COAL	Y	13306		29578			1/17/2007
35029207750000	ANTERO RESOURCES	FANNING	36-1H	36	1S	10E	COAL	Y	12004		32196			12/9/2006
35005203010000	ANTERO RESOURCES	PETTIGREW	19-1H	18	2S	11E	ATOKA	Y	12687		60196			7/17/2006
35029207660000	ANTERO RESOURCES	PRUDENTIAL	32-1H	32	1S	11E	COAL	Y	13451		78918			10/30/2006
35005203230000	ANTERO RESOURCES	RUSSELL	17-H	8	2S	11E	ATOKA	Y	12490		120783			11/24/2006
35029207740000	ANTERO RESOURCES	BLUE	35-1H	35	1S	10E	COAL	Y	11550		124256			11/1/2006
35005202960000	ANTERO RESOURCES	CARR ESTATE	14-1H	14	2S	10E	ATOKA	Y	10118		134950			5/9/2006
35005203030000	ANTERO RESOURCES	CARR ESTATE	2-1H	2	2S	10E	ATOKA	Y	12204		166177			10/2/2006
35005203050000	ANTERO RESOURCES	MACK CARR	8-1H	8	2S	11E	ATOKA	Y	13135		167136			8/17/2006
35005203120000	ANTERO RESOURCES	CARVER	11-1H	11	2S	10E	ATOKA	Y	12144		176781			12/1/2006
35005202990000	ANTERO RESOURCES	PETTIGREW	18-1H	18	2S	11E	ATOKA	Y	11850		180578			7/16/2006
35005202910000	ANTERO RESOURCES	CARR ESTATE	1	13	2S	10E	ATOKA	Y	11157		188652			3/8/2006
35005203200000	ANTERO RESOURCES	CARR ESTATE	1-1H	12	2S	10E	ATOKA	Y	11684		204797			11/21/2006
35029208150000	ANTERO RESOURCES	CALLICOAT	31-1H	30	1S	11E	COAL	Y	14698					2/22/2007
35061220310000	BP AMERICA	KRISHER	4	25	8N	22E	HASKELL		7355	88		15485	SPIRO	1/14/2005
35107052420001	BURKE-GREIS OIL	SCOTT W M	1	20	10N	10E	OKFUSKEE		3708					5/15/1941
35121233650000	CHESAPEAKE OPERATING INC	USELTON	2-6	6	6N	14E	PITTSBURG		7010			51083	MISS	4/29/2005
35121233240000	CHESAPEAKE OPERATING INC	LONDON	1-31	31	7N	14E	PITTSBURG		6716	82		53230	WAP/SPIRO	2/12/2005
35121234290000	CHESAPEAKE OPERATING INC	WALLS	1-34	34	6N	12E	PITTSBURG		7703			67614	WAP/SPIRO	9/8/2005
35121234780000	CHESAPEAKE OPERATING INC	OWEN KYLIE	1-12	12	5N	12E	PITTSBURG		8450			79613	JEFF/CROM	1/3/2006
35121235720000	CHESAPEAKE OPERATING INC	TRACY	1-7	7	5N	12E	PITTSBURG		7680			88006	JEFF/WAP	4/17/2006
35121234630000	CHESAPEAKE OPERATING INC	SUNDOWN	1-20	20	4N	12E	PITTSBURG		9289			244064	WAP	10/15/2005
35121232780000	CHESAPEAKE OPERATING INC	DILLINGHAM	1-12	12	5N	12E	PITTSBURG		8216			249517	JEFF/CROM	1/1/2005
35121234470000	CHESAPEAKE OPERATING INC	WILSON	1-23	23	5N	13E	PITTSBURG		9702			339449	SIMPS/JEFF/CROM	2/13/2006
35063238510000	CHESAPEAKE OPERATING INC	GANN	1-21H	21	8N	12E	HUGHES	Y	8063		3022			3/1/2007
35091213950000	CHESAPEAKE OPERATING INC	RANCH	2-20	20	11N	15E	MC INTOSH		3440	37	5201			3/7/2005
35063238280000	CHESAPEAKE OPERATING INC	KAMPERMAN	1-2H	2	8N	11E	HUGHES	Y	7678		29095			1/1/2007
35063237990000	CHESAPEAKE OPERATING INC	BRUMBAUGH	1-10H	10	5N	11E	HUGHES	Y	10067		60558			10/5/2006
35121233490000	CHESAPEAKE OPERATING INC	BURLESON	1-1	1	5N	12E	PITTSBURG		7960	106	111590			2/25/2005
35063236660000	CHESAPEAKE OPERATING INC	SELLERS	3-35	35	4N	11E	HUGHES		8770	181	147200			2/14/2006
35121236640000	CHESAPEAKE OPERATING INC	HARLOW	30-1	30	4N	12E	PITTSBURG		8000	170	200577			9/1/2006
35029206900000	COLA RESOURCES LLC	MCNUTT	4-2	4	3N	11E	COAL		8500			82706	JEFF/CROM/WAP	11/5/2004
35063237120000	CONTINENTAL RESOURCES INC	PRICE	A 22-7-10	22	4N	9E	HUGHES		6114	151	10302			12/16/2005
35063237200000	CONTINENTAL RESOURCES INC	HUFFSTUTLAR	A 21-10	21	4N	9E	HUGHES	Y	7674		15871			2/22/2006
35063237600000	CONTINENTAL RESOURCES INC	WILSON B	14-12	14	4N	10E	HUGHES	Y	9543		173159			8/1/2006
35063237360000	CROWN ENERGY COMPANY	PHILLIPS	12-1	12	6N	9E	HUGHES		5000	161	26033			7/25/2006
35063302650000	CUESTA PETRO INC	LUCAS	1	3	8N	12E	HUGHES		4051		7035			7/15/1963
35063302650001	CUESTA PETRO INC	LUCAS	1	3	8N	12E	HUGHES		4765	58	7035			7/1/2005
35005202850000	DEVON ENERGY	THOMAS	1-34	34	2S	10E	ATOKA		6450	245			WAP	8/4/2005
35063238150000	DEVON ENERGY	GUFFEY	1-11H	11	4N	10E	HUGHES	Y	9960		19186			2/1/2007
35029206980000	DEVON ENERGY	ROGERS TRUST	24-1	24	3N	10E	COAL		8072	174	30982			4/17/2005
35029207780000	DEVON ENERGY	ROSS	1-35H	35	3N	10E	COAL	Y	10340		57953			2/7/2007
35029206860000	DEVON ENERGY	DOUBLE 5 RANCH	18-1	18	3N	11E	COAL		7900	169	68506			3/20/2005
35029207920000	DEVON ENERGY	HATRIDGE	1-10H	10	3N	11E	COAL	Y	10926		79140			2/1/2007
35029207610000	DEVON ENERGY	ROGERS	1-26H	26	3N	10E	COAL	Y	9885		112406			9/1/2006
35029207380000	DEVON ENERGY	DOTTIE	14-1	14	3N	10E	COAL	Y	9390		119258			4/25/2006
35063236480000	DEVON ENERGY	FREEPORT	2-32	32	4N	11E	HUGHES		8050	158	121067			12/28/2004
35029207400000	DEVON ENERGY	JORDAN	23-1	23	3N	10E	COAL		9440		156829			5/1/2006
35029207510000	DEVON ENERGY	PARKER	1-7H	6	3N	11E	COAL	Y	11480		176184			6/15/2006
35029207560000	DEVON ENERGY	ROGER TRUST	1-25H	25	3N	10E	COAL	Y	11460		176705			7/31/2006
35063237050000	DEVON ENERGY	EDWARDS	26-1	26	4N	10E	HUGHES	Y	9933		202055			10/29/2005
35029207820000	DEVON ENERGY	PARKER	1-6H	6	3N	11E	COAL	Y	9890		210977			11/7/2006
35063237840000	DEVON ENERGY	BREWER	1-12H	13	4N	10E	HUGHES	Y	10260		229428			8/27/2006
35029207340000	DEVON ENERGY	DOUBLE 5 RANCH	13-1	13	3N	10E	COAL	Y	9820		232087			4/11/2006
35029207730000	DEVON ENERGY	PASQUALI	1-17H	17	3N	11E	COAL	Y	11125		250147			10/1/2006
35029207770000	DEVON ENERGY	DOUBLE 5 RANCH	1-31H	31	3N	11E	COAL	Y	11110		275168			10/1/2006
35029207290000	DEVON ENERGY	DOUBLE 5 RANCH	18-2	18	3N	11E	COAL	Y	10000		311354			3/29/2006
35029207630000	DEVON ENERGY	MILLER	1-21H	21	3N	11E	COAL	Y	10805		322983			9/26/2006
35029207480000	DEVON ENERGY	PARKER	1-7H	6	3N	11E	COAL	Y	11490		343612			6/30/2006
35063237250000	DEVON ENERGY	WILLIAMS	18-1	18	4N	11E	HUGHES	Y	10171		347672			2/1/2006
35029207720000	DEVON ENERGY	GUINN	1-5H	5	3N	11E	COAL	Y	10545		359974			9/14/2006
35029207120000	DEVON ENERGY	DOUBLE 5 RANCH	1-12H	12	3N	10E	COAL	Y	11000		373901			8/27/2005
35029207530000	DEVON ENERGY	PARKER	1-1H	1	3N	10E	COAL	Y	11712		425424			7/30/2006
35029207450000	DEVON ENERGY	PASQUALI	1-8H	8	3N	11E	COAL	Y	10100		475871			5/12/2006
35029207140000	DEVON ENERGY	BILLIE JEAN	1-20H	20	3N	11E	COAL	Y	11237		740902			9/19/2005
35005200420001	DEVON ENERGY	MULLEN A	1-32	32	3S	11E	ATOKA		13188					3/4/2005
35107232340000	ENTERPRISE ENERGY EXPL INC	AUSTEX	27-1	27	10N	11E	OKFUSKEE		3800		14865			8/31/2005
35063237090000	GLENN SUPPLY CO	WALTER	9-1	9	6N	11E	HUGHES		6178	119	36267			9/8/2005
35063214530000	HILL OIL & GAS CO	LAWSON	2	35	4N	9E	HUGHES		5927	149	11165			1/8/1982
35063213130000	HILL OIL & GAS CO	NOEL	2	27	4N	9E	HUGHES		6825	147				7/27/1982
35063237520000	HUNTON OIL & GAS CO	LONGVIEW	1	5	8N	12E	HUGHES		4365			7298	CANEY/GILC	7/24/2006
35063236770000	HUNTON OIL & GAS CO	KOBE	1	5	8N	12E	HUGHES		4306	63	51635			5/25/2005
35063237390000	JAY PETROLEUM INC	SANDERS	4	7	7N	12E	HUGHES		5070	91	99335			6/14/2006
35091215750000	JOLEN OPERATING CO	WIEDEL WCS	5-1	4	8N	13E	MC INTOSH	Y	5083		16186			10/5/2006
35063236220000	MARBET LLC	MARBET LLC	48	5	7N	10E	HUGHES		3807			76822	CANEY	7/12/2004

API No.	Operator	Well Name	Well No.	Sec	Twn	Rge	County	Horizontal?	TD	Gross Woodford Thickness (ft)	Woodford Only Cummulative Gas (MCF)	Woodford Commingled Cummulative Gas (MCF)	Zones Commingled with Woodford	Completion Date
35063224810000	MARBET LLC	HICKORY HILLS	1	21	5N	11E	HUGHES		7500	151		228410	JEFF/THURM	10/16/1986
35107232440000	METRO ENERGY INC	LONGVIEW	17-2	17	10N	12E	OKFUSKEE		3950	53	11999			8/15/2005
35107232450000	METRO ENERGY INC	HUDSON	16-1	16	10N	12E	OKFUSKEE		3950	56	12755			9/1/2005
35107232400000	METRO ENERGY INC	LONGVIEW	17-1	17	10N	12E	OKFUSKEE		3950	46	14385			8/1/2005
35107232380000	METRO ENERGY INC	SNELL HEIRS	17-1	17	10N	12E	OKFUSKEE		3962		17211			4/29/2005
35107232390000	METRO ENERGY INC	SNELL HEIRS	18-4	18	10N	12E	OKFUSKEE		3905	43	45744			5/1/2005
35107232230000	METRO ENERGY INC	SNELL-HEIRS	19-2	19	10N	12E	OKFUSKEE		3870		238838			12/13/2004
35121230520000	NEWFIELD EXPLORATION	VAN PELT	7-1	7	6N	13E	PITTSBURG		6876	107		4248	CANEY	12/8/2004
35121233020000	NEWFIELD EXPLORATION	JOHNSON	2-36	36	6N	12E	PITTSBURG		7864	99		17553	WAP	4/22/2005
35121231450000	NEWFIELD EXPLORATION	LOFTIS A E	15-4	15	5N	12E	PITTSBURG		7881			38131	WAP	9/22/2004
35121235180000	NEWFIELD EXPLORATION	WALLACE	9-5	9	5N	13E	PITTSBURG		9295			41865	CROM	2/7/2006
35121230860000	NEWFIELD EXPLORATION	MYERS MOLLIE	19-1	19	7N	13E	PITTSBURG		5796	104		42617	WAP	12/8/2004
35121230760000	NEWFIELD EXPLORATION	JOHN	1-32	32	7N	13E	PITTSBURG		6430			51157	CANEY/WAP	12/8/2004
35121236350000	NEWFIELD EXPLORATION	HOLEMAN	22-1	22	6N	13E	PITTSBURG		8857			51730	CROM	5/17/2006
35121235210000	NEWFIELD EXPLORATION	CHANDLER	16-3	16	5N	13E	PITTSBURG		9353			52475	CROM	3/1/2006
35121235910000	NEWFIELD EXPLORATION	VERNER	11-5	11	5N	13E	PITTSBURG		9243			53222	CROM	5/25/2006
35121235190000	NEWFIELD EXPLORATION	GRANT	10-3	10	5N	13E	PITTSBURG		9484			57759	CROM	2/28/2006
35121234890000	NEWFIELD EXPLORATION	GRANT	10-2	10	5N	13E	PITTSBURG		9329			63502	CROM	2/27/2006
35121233960000	NEWFIELD EXPLORATION	BARNETT	19-2	19	5N	13E	PITTSBURG		8822			74648	CROM/WAP	5/24/2005
35121234580000	NEWFIELD EXPLORATION	WALLACE	9-4	9	5N	13E	PITTSBURG		9064			77457	CROM	11/2/2005
35121233850000	NEWFIELD EXPLORATION	LOFTIS A E	15-5	15	5N	12E	PITTSBURG		7993			77593	WAP	8/6/2005
35121236310000	NEWFIELD EXPLORATION	EZELL	14-2	14	5N	13E	PITTSBURG		9450			89944	CROM	8/16/2006
35121234310000	NEWFIELD EXPLORATION	VERNER	11-4	11	5N	13E	PITTSBURG		9606			90841	CROM	8/10/2005
35121234790000	NEWFIELD EXPLORATION	GRANTHAM	2-31	31	6N	14E	PITTSBURG		9062	118		93237	CROM	11/4/2005
35029207210000	NEWFIELD EXPLORATION	SPRAGUE	17-1	17	2N	11E	COAL		11800			94082	CROM	11/7/2005
35063236000000	NEWFIELD EXPLORATION	NUNN	1-1	1	5N	11E	HUGHES		7200	155		95225	JEFF/CROM/WAP	7/27/2004
35121237630000	NEWFIELD EXPLORATION	SANDRA	12-5	12	5N	13E	PITTSBURG		9300	126		99603	CROM	12/20/2006
35029207110000	NEWFIELD EXPLORATION	COMETTI	13-1	13	2N	11E	COAL		12109	185		101434	CROM	9/7/2005
35121232430000	NEWFIELD EXPLORATION	STARK	4-2	4	5N	13E	PITTSBURG		9041	131		113733	CROM	10/14/2004
35121235030000	NEWFIELD EXPLORATION	VERNER	7-3	7	5N	14E	PITTSBURG		9147			115103	CROM/WAP	2/21/2006
35063236670000	NEWFIELD EXPLORATION	WALKER HEIRS	27-3	27	6N	11E	HUGHES		7264	111		118943	WAP	5/2/2005
35121231670100	NEWFIELD EXPLORATION	HESKETT	25-1	25	6N	12E	PITTSBURG		9140			119121	CANEY/CROM	7/7/2004
35121236270000	NEWFIELD EXPLORATION	CRAWFORD TRUST	19-3	19	6N	14E	PITTSBURG		8822	105		121407	CROM	5/18/2006
35005202950000	NEWFIELD EXPLORATION	HARRIS	6-1	6	2N	12E	ATOKA		12025	226		138518	ATK	1/22/2006
35121234370000	NEWFIELD EXPLORATION	VERNER W L	7-2	7	5N	14E	PITTSBURG		8930			145082	CROM/WAP	10/10/2005
35121232260000	NEWFIELD EXPLORATION	LOFTIS	6-1	6	4N	12E	PITTSBURG		8714	144		145750	WAP	11/17/2004
35121232230000	NEWFIELD EXPLORATION	ANDREW	19-1	19	5N	14E	PITTSBURG		10286	115		162338	CROM	10/14/2004
35121233770000	NEWFIELD EXPLORATION	PEGGY	2-33	33	6N	13E	PITTSBURG		8925			171706	CROM	8/18/2005
35121232220000	NEWFIELD EXPLORATION	LAMBERT	10-2	10	5N	12E	PITTSBURG		7698	98		171910	WAP	8/15/2004
35121235340000	NEWFIELD EXPLORATION	JUANITA	13-2	13	5N	13E	PITTSBURG		9246			178135	CROM	2/25/2006
35063238030000	NEWFIELD EXPLORATION	TURPIN	1H-35	35	4N	10E	HUGHES	Y	9909			180583	CANEY	11/13/2006
35121234330000	NEWFIELD EXPLORATION	SANDRA	12-4	12	5N	13E	PITTSBURG		9319			187172	JEFF/CROM/WAP	9/10/2005
35121235050000	NEWFIELD EXPLORATION	VERNER	7-4	7	5N	14E	PITTSBURG		9074			192862	CROM/WAP	2/20/2006
35121235860000	NEWFIELD EXPLORATION	CHRISTINE	1-2	1	5N	13E	PITTSBURG		9580			285360	CROM	8/23/2006
35121234130000	NEWFIELD EXPLORATION	CRAWFORD	1-33	33	5N	12E	PITTSBURG		8790			289499	JEFF/CROM/WAP	8/29/2005
35121235850000	NEWFIELD EXPLORATION	MILLS 1-5	5-1	5	5N	14E	PITTSBURG		9117			310284	CROM	3/29/2006
35121233860000	NEWFIELD EXPLORATION	SANDRA	12-2	12	5N	13E	PITTSBURG		9050			327564	WAP	5/23/2005
35121234180000	NEWFIELD EXPLORATION	VERNER W L	7-1	7	5N	14E	PITTSBURG		9205			403792	CROM	8/18/2005
35121234070000	NEWFIELD EXPLORATION	SANDRA	12-3	12	5N	13E	PITTSBURG		9090	125		416011	CROM	7/30/2005
35121232450000	NEWFIELD EXPLORATION	ROBBIE G	1-34	34	5N	12E	PITTSBURG		8800	149		434700	MORR	1/26/2005
35121234150000	NEWFIELD EXPLORATION	WATKINS	6-3	6	5N	14E	PITTSBURG		8858	34		489216	CROM	7/12/2005
35121235790000	NEWFIELD EXPLORATION	CHRISTINE	1-3	1	5N	13E	PITTSBURG		9190			541730	CROM	3/29/2006
35063235950000	NEWFIELD EXPLORATION	REYNOLDS	11-1	11	5N	11E	HUGHES		7354	161		566719	CANEY/WAP	7/23/2004
35121234320000	NEWFIELD EXPLORATION	MABRAY B & D	22-1	22	4N	12E	PITTSBURG		9775	156		580827	WAP	8/18/2005
35121237650000	NEWFIELD EXPLORATION	WATKINS	6-5	6	5N	14E	PITTSBURG		8625		9924			1/29/2007
35063238180000	NEWFIELD EXPLORATION	COLLEEN	1H-35	35	5N	11E	HUGHES	Y	10783		16971			12/7/2006
35029207870000	NEWFIELD EXPLORATION	ILBERRY	1H-1	1	2N	11E	COAL	Y	13758		42698			12/28/2006
35029207830000	NEWFIELD EXPLORATION	FARRIS	1H-24	24	2N	10E	COAL	Y	11892		44030			12/18/2006
35029206950000	NEWFIELD EXPLORATION	MAYER	1D-26	26	2N	10E	COAL		8950	176	46553			1/21/2005
35063238090000	NEWFIELD EXPLORATION	MORRIS	1H-3	3	4N	11E	HUGHES	Y	10779		48329			2/1/2007
35029207270000	NEWFIELD EXPLORATION	SMITH	9-1	9	2N	11E	COAL		11744	203	62190			12/18/2005
35121237860000	NEWFIELD EXPLORATION	GRANT	1H-6	6	5N	12E	PITTSBURG	Y	9756		70116			2/1/2007
35121235960000	NEWFIELD EXPLORATION	CUNNINGHAM	31-1	31	4N	12E	PITTSBURG		9032	197	75810			5/3/2006
35063236850000	NEWFIELD EXPLORATION	POE	29-1	29	4N	11E	HUGHES		8026	145	88047			10/14/2004
35121232840000	NEWFIELD EXPLORATION	ELLIS SHERMAN	22-3	22	5N	12E	PITTSBURG		8385	137	95986			11/23/2004
35029207690000	NEWFIELD EXPLORATION	EDDINGS	1H-23	23	2N	10E	COAL	Y	12200		105263			9/24/2006
35029207230000	NEWFIELD EXPLORATION	ENNIS	17-1	12	2N	11E	COAL		12258	198	113505			11/15/2005
35121235990000	NEWFIELD EXPLORATION	ORR	15-1	15	4N	12E	PITTSBURG		9467		123819			3/2/2006
35063238250000	NEWFIELD EXPLORATION	MELVIN	1H-20	20	4N	11E	HUGHES	Y	10873		128363			1/12/2007
35063238240000	NEWFIELD EXPLORATION	TIPTON	1H-30	19	4N	11E	HUGHES	Y	10319		135411			11/28/2006
35029207360000	NEWFIELD EXPLORATION	VAUGHN	1H-35	35	2N	10E	COAL	Y	12611		150055			8/14/2006
35029207650000	NEWFIELD EXPLORATION	PERRY	1H-12	12	2N	10E	COAL	Y	13552		162379			10/13/2006
35063237940000	NEWFIELD EXPLORATION	CATTLE	1H-21	21	4N	10E	HUGHES	Y	10129		165599			9/12/2006
35029207710000	NEWFIELD EXPLORATION	BALM	14	14	2N	11E	COAL	Y	14374		186822			11/9/2006
35063237540000	NEWFIELD EXPLORATION	MORRIS	1H-21	21	4N	11E	HUGHES	Y	10953		197453			5/24/2006
35029207550000	NEWFIELD EXPLORATION	MAUK	1H-36	36	2N	10E	COAL	Y	13507		204180			8/15/2006

API No.	Operator	Well Name	Well No.	Sec	Twn	Rge	County	Horizontal?	TD	Gross Woodford Thickness (ft)	Woodford Only Cummulative Gas (MCF)	Woodford Commingled Cummulative Gas (MCF)	Zones Commingled with Woodford	Completion Date
35029207760000	NEWFIELD EXPLORATION	WILSON	1H-32	32	2N	11E	COAL	Y	14250		223337			11/13/2006
35029207370000	NEWFIELD EXPLORATION	WILSON	1H-28	28	2N	11E	COAL	Y	12364		226166			6/7/2006
35063237780000	NEWFIELD EXPLORATION	ADAMS	1H-4	4	4N	11E	HUGHES	Y	11100		243447			7/12/2006
35063237480000	NEWFIELD EXPLORATION	REEDER	1H-10	10	4N	11E	HUGHES	Y	11075		247049			5/18/2006
35005202970000	NEWFIELD EXPLORATION	PRATHER	1H-7	7	2N	12E	ATOKA	Y	14727		260605			8/15/2006
35063237420000	NEWFIELD EXPLORATION	WHITLOW	1H-27	27	4N	10E	HUGHES	Y	10067		262262			5/18/2006
35121237420000	NEWFIELD EXPLORATION	ELMS	1H-4	4	5N	12E	PITTSBURG	Y	10366		267309			11/23/2006
35029207600000	NEWFIELD EXPLORATION	EDDINGS	1H-14	14	2N	10E	COAL	Y	12437		296827			10/13/2006
35063237860000	NEWFIELD EXPLORATION	LS	1H-12	12	5N	11E	HUGHES	Y	10034		299651			9/1/2006
35121236590000	NEWFIELD EXPLORATION	KELLEY	1H-5	5	5N	12E	PITTSBURG	Y	10447		303943			6/22/2006
35063237900000	NEWFIELD EXPLORATION	BURTON	1H-17	17	4N	11E	HUGHES	Y	11000		331799			8/9/2006
35121233110000	NEWFIELD EXPLORATION	BLEVINS	3H-9	9	5N	12E	PITTSBURG	Y	8855		333994			4/6/2005
35063237550000	NEWFIELD EXPLORATION	MOONEY	1H-19	19	4N	11E	HUGHES	Y	10675		342005			5/18/2006
35063237850000	NEWFIELD EXPLORATION	TIPTON	1H-23	23	4N	10E	HUGHES	Y	7860		361291			10/3/2006
35029207410000	NEWFIELD EXPLORATION	SPRAGUE	1H-7	7	2N	11E	COAL	Y	12615		363367			9/16/2006
35063237690000	NEWFIELD EXPLORATION	SANFORD	1H-28	28	4N	10E	HUGHES	Y	10085		368963			6/14/2006
35063238010000	NEWFIELD EXPLORATION	TOLLETT	1H-22	22	4N	10E	HUGHES	Y	10329		413643			10/26/2006
35029207500000	NEWFIELD EXPLORATION	BULLOCK	1H-15	15	2N	10E	COAL	Y	13006		450650			7/14/2006
35063237630000	NEWFIELD EXPLORATION	PATTERSON	1H-31	31	4N	11E	HUGHES	Y	10536		481755			5/24/2006
35063238160000	NEWFIELD EXPLORATION	STUART	1H-13	13	5N	11E	HUGHES	Y	10357		504042			11/1/2006
35063237490000	NEWFIELD EXPLORATION	PARKER	1H-36	36	4N	10E	HUGHES	Y	10250		530832			3/15/2006
35029207420000	NEWFIELD EXPLORATION	HEDGECOCK	1H-31	31	2N	11E	COAL	Y	12708		539001			6/7/2006
35063238260000	NEWFIELD EXPLORATION	PATTERSON	2H-31	31	4N	11E	HUGHES	Y	11838					12/1/2006
35121237090000	NEWFIELD EXPLORATION	CHANDLER	1H-16	16	5N	13E	PITTSBURG	Y	12031					11/23/2006
35121235320000	NEWFIELD EXPLORATION	JOHNSTON	24-2	24	5N	13E	PITTSBURG		9514					2/24/2006
35121235930000	NEWFIELD EXPLORATION	JOHNSTON	24-3	24	5N	13E	PITTSBURG		9695	119				10/21/2006
35091214650000	NOBLE ENERGY INC	BLACKBIRD	10	16	11N	14E	MC INTOSH		3315	37	32637			10/1/2005
35111271760000	NOBLE ENERGY INC	DODGE	24-10H	24	11N	13E	OKMULGEE		4768					
35005203100000	PABLO ENERGY II LLC	HARDMAN	1H-25	25	2S	10E	ATOKA	Y	11127					10/30/2006
35029207440000	PABLO ENERGY II LLC	DENSON	1H-15	15	1N	10E	COAL	Y	11260					9/20/2006
35091215340000	PANTHER ENERGY INC	LIZZY	1-1	1	8N	13E	MC INTOSH		5131	50	12070			4/8/2006
35063236600000	PANTHER ENERGY INC	HARRIET	28-2	28	8N	12E	HUGHES		4975	79	38200			5/14/2005
35063236780000	PANTHER ENERGY INC	HARRIET	28-1	28	8N	12E	HUGHES		4990	95	81745			5/30/2005
35121236330000	PETROQUEST ENERGY	JERRY STEIDLEY	5-16CW	16	7N	15E	PITTSBURG		7760		3786			7/9/2006
35121236880000	PETROQUEST ENERGY	MR BILL	30-1	30	7N	15E	PITTSBURG		8330		109628			8/2/2006
35063238120000	PONTOTOC PRODUCTION	EDWARDS	9-3	9	6N	10E	HUGHES		5760		524			12/11/2006
35063237830000	PONTOTOC PRODUCTION	SMART	1-35	35	8N	11E	HUGHES		4900	85	28080			7/20/2006
35063237500000	PONTOTOC PRODUCTION	PARKS	5	1	6N	10E	HUGHES		5580	142	31784			1/27/2006
35063237910000	PONTOTOC PRODUCTION	MEADORS	1-36H	36	7N	10E	HUGHES	Y	7696		31994			6/20/2006
35107232490000	RED FORK PROD LLC	HUNN	34-1	34	10N	11E	OKFUSKEE		3903	40				4/10/2006
35107232500000	RED FORK PROD LLC	KING	23-1	23	10N	11E	OKFUSKEE		4106	46				1/20/2006
35121237620000	SEDNA	VERNER	18-2	18	5N	14E	PITTSBURG		9300				CROM	2/9/2007
35091214500000	SHIELDS OPERATING INC	JACKY	5-1	5	10N	13E	MC INTOSH		3260		5831			2/1/2006
35063217490004	SPRING HARRY A	JASON	B-1	6	6N	10E	HUGHES		5717					10/30/1994
35029207460000	ST MARY LAND & EXPLORATION C	PRINGLE	13-1	13	1N	10E	COAL	Y	9215			241527	CROM/WAP	6/10/2006
35029206880000	ST MARY LAND & EXPLORATION C	VICTOR	7-1	7	1N	10E	COAL		8498	106		242301	CANEY	11/9/2004
35029207430000	ST MARY LAND & EXPLORATION C	COALGATE LAKE	2-1	2	1N	10E	COAL	Y	10765		11428			6/1/2006
35029207880000	ST MARY LAND & EXPLORATION C	CHURNER	7-1	7	1N	11E	COAL	Y	12985		21799			1/22/2007
35029207810000	ST MARY LAND & EXPLORATION C	SANDMANN	18-1	18	1N	11E	COAL	Y	9343		27023			11/6/2006
35029207570000	ST MARY LAND & EXPLORATION C	MCKINNEY WOOD	1-6	1	1N	9E	COAL	Y	9325		59759			6/19/2006
35029207350000	ST MARY LAND & EXPLORATION C	GAYLOR RYAN	2-32	32	2N	10E	COAL	Y	11598		104496			4/24/2006
35029207790000	ST MARY LAND & EXPLORATION C	ELAINE	9-2	9	1N	10E	COAL	Y	11050		149484			10/14/2006
35029207640000	ST MARY LAND & EXPLORATION C	HAMPTON TERESA	6-1	6	1N	11E	COAL	Y	12859		227410			9/30/2006
35029207180000	ST MARY LAND & EXPLORATION C	BEY ANN	7-2	7	1N	10E	COAL	Y	8904		300200			8/12/2005
35029207310000	SUNDOWN ENERGY LP	GAYLOR SYDNEY	30-1	30	2N	10E	COAL		9070	117	8461			9/18/2006
35063237280000	TREK RESOURCES INC	TUCKER	A 26A-4	26	4N	9E	HUGHES		5786	165	13820			5/1/2006
35121234910000	XTO ENERGY INC	ROGERS	2-30	30	5N	12E	PITTSBURG		8146	133		110134	WAP	3/1/2006
35121233660001	XTO ENERGY INC	HALL	29-3	29	5N	12E	PITTSBURG		8254	79	152326			9/16/2005
35063235280001	YALE OIL ASSOC INC	MARBET	40R	15	8N	12E	HUGHES		4933	62	20762			6/10/2005
35063235280000	YALE OIL ASSOC INC	MARBET LLC	40	15	8N	12E	HUGHES		4225	64	21597			6/1/2002
35063229240000	YALE OIL ASSOC INC	PRYOR	1	22	8N	12E	HUGHES		4289		32873			6/14/1990
35063229240001	YALE OIL ASSOC INC	PRYOR	1-22R	22	8N	12E	HUGHES		5022		32873			6/29/2005
35063236970000	YALE OIL ASSOC INC	LUNA	22-1	22	7N	11E	HUGHES		5365	117	45706			6/3/2005

APPENDIX B: ALL WOODFORD PICKS (702)

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35005200980000	HAMILTON BROS OIL CO	PINE MOUNTAIN	1-35	35	2N	13E	ATOKA	15225	13711	13771	13849	13893
35005202780000	BRIGHTON ENERGY L L C	PENICK	27-1	27	2S	10E	ATOKA	6350	6089	6132	6190	6240
35005202850000	DEVON ENERGY PRODUCTION COMI	THOMAS	1-34	34	2S	10E	ATOKA	6450	5885	5920	5983	6044
35005202950000	NEWFIELD EXPLORATION MID-CONT	HARRIS	1-6	6	2N	12E	ATOKA	12025	11634	11680	11764	11860
35029206510000	ST MARY LAND & EXPLORATION CO	KASHWER	1-6	6	1N	10E	COAL	8725	7281	7306	7363	7397
35029206460000	ST MARY LAND & EXPLORATION CO	HANEY	1-36	36	2N	9E	COAL	8375	7085	7114	7165	7190
35029206330000	ST MARY LAND & EXPLORATION CO	BULL MOUNTAIN	1-1	1	1N	9E	COAL	7828	7022			7134
35029206320000	ST MARY LAND & EXPLORATION CO	TERRANOVA HEIRS	1-31	31	2N	10E	COAL	8001	7212			7328
35029206230000	SAMSON RESOURCES COMPANY	MCKINNEY	2	1	1N	9E	COAL	7700	7001	7020	7087	7109
35029206590000	ST MARY LAND & EXPLORATION CO	KIM	1-35	35	2N	9E	COAL	8467	6948	6975	7042	7075
35029206880000	ST MARY LAND & EXPLORATION CO	VICTOR	1-7	7	1N	10E	COAL	8498	7002	7027	7085	7108
35029206060000	NEWFIELD EXPLORATION MID-CONT	CHANDLER	1-22	22	1N	9E	COAL	8167	6324	6348	6408	6443
35029206840000	ST MARY LAND & EXPLORATION CO	JOHNNY	3-6	6	1N	10E	COAL	8445	7074			7160
35029203270000	ARROW ENERGY INCORPORATED	CENTRAHOMA TOV	2	27	2N	9E	COAL	6998	5462	5483	5553	5584
35029002660000	IDAHO OIL COMPANY INCORPORATE	RIDDLE	1	27	2N	9E	COAL	5200	5785	5815	5887	5914
35029202080000	LITTLE QUINTIN COMPANY INCORPO	STRUNK	1	22	2N	9E	COAL	7365	5838	5865	5931	5961
35029201700000	XTO ENERGY INCORPORATED	BEY	1-7	7	1N	10E	COAL	8605	7257			7365
35029202940000	GOMACO INC	HOLDER	1-28	28	2N	9E	COAL	7228	5692	5720	5786	5817
35029202800000	GOMACO OPERATING COMPANY	CRANE	1-28	28	2N	9E	COAL	7161	5650	5674	5742	5772
35029201690000	ST MARY LAND & EXPLORATION CO	BOB CODY	1	35	2N	9E	COAL	8456	7018	7051	7111	7139
35029201330000	BHP PETROLEUM (USA) INCORPORA	CODY	1	26	2N	9E	COAL	6925	6200	6230	6295	6321
35029207310000	SUNDOWN ENERGY LIMITED PARTNE	GAYLOR SYDNEY	1-30	30	2N	10E	COAL	9070	7584	7608	7668	7701
35029207170000	ST MARY LAND & EXPLORATION CO	SUMMER	3-31	31	2N	10E	COAL	7738	7344			7450
35029203260000	MAPCO	LITTEN	1-29	29	2N	9E	COAL	7110	6411	6438	6491	6515
35029202350000	DAVIS BROTHERS OIL PRODUCERS	CRANE	1	20	2N	9E	COAL	6804	5789	5817	5873	5900
35029202780000	BROCK HYDROCARBONS INCORPOR	WATKINS	1-34	34	1N	10E	COAL	9200	7707			7823
35029201340000	GLOBAL GAS CORP	PRICE	1	4	3N	9E	COAL	6470	5220			5353
35029201650000	WILSHIRE OIL OF TX	HORACE	1	5	3N	9E	COAL	6426	5200			5315
35029205270000	GUNGOLL C E	HUDSON	1-26	26	1N	8E	COAL	6585	4561	4608	4676	4719
35029203020000	KLEIN M E & ASSOCIATES	EMMA VITOSH	1-28	28	1N	10E	COAL	7739	7253			7345
35029203400000	WHITMAR EXPL CO	MCINTIRE	1-15	15	1N	11E	COAL	11760	10385			10558
35029204110000	APACHE	CROW M	2-34	34	2N	11E	COAL	14100	10543	10586	10666	10740
35029203330000	PONTOTOC PRODUCTION COMPANY	BROWN LOWINA	4	7	1N	8E	COAL	4800	3398	3442	3504	3534
35029202820000	ARROW ENERGY INCORPORATED	GREGORY ROGER	1	6	1N	8E	COAL	4426	3977	4012	4076	4111
35029202540000	BLANCHARD HENRY	MCCRORY	1	4	1N	8E	COAL	4800	4538	4574	4635	4660
35029201490000	CONOCO	S A SMITH	1-15	15	3N	11E	COAL	9800	8434	8462	8543	8608
35029201980000	ENERGY RESOURCES INCORPORAT	KIMBALL	1-21	21	3N	11E	COAL	9950	8681	8706	8770	8824
35029205570000	NEWFIELD EXPLORATION MID-CONT	REARDEN	33C-2	33	3N	10E	COAL	8146	6732			6872
35029203040000	PATRICK PET CO	MURPHY	1	31	3N	9E	COAL	6050	4440			4549
35029202860000	GOMACO INC	GREEN	1-6	6	2N	9E	COAL	8271	6688	6708	6763	6789
35029202950000	ANR	SELLS	1	4	3N	10E	COAL	7803	6100	6137	6215	6284
35029205480000	GUNGOLL & GUNGOLL	DEMOND PARKER	1-30	30	1N	9E	COAL	6900	5175			5283
35029202750000	NOVA ENERGY CORP	JONES	1	5	1S	10E	COAL	8550	6864	6901	6970	6998
35029202850000	WENTWORTH OPER COMPANY	JONES	1-29	29	1N	10E	COAL	7698	7015	7049	7108	7137
35029202590000	PAYNE W C	POWELL	1-36	36	1N	9E	COAL	7890	6339			6479
35029202340000	VIKING PETRO INC	AXTON	1	30	1N	10E	COAL	7053	6846	6880	6944	6965
35029203470000	VIERSEN & COCHRAN	HARKINS	1-6	6	1N	9E	COAL	7250	5594	5634	5686	5715
35029201290000	GLOBAL GAS CORP	ROUND LAKE	1	10	1N	9E	COAL	8780	7183			7285
35029203590000	ARDMORE DRLG CO	WOOLEY	7-1	7	2N	8E	COAL	6100	5889	5926		5975
35029202770000	GOMACO INC	ROLLINS	1-20	20	2N	9E	COAL	7270	6181	6205	6266	6280
35029204260000	BLANCHARD HENRY	PARKS ESTATE	1	19	2N	9E	COAL	7658	6063	6082	6136	6162
35029000660000	LEONARD OIL COMPANY	GUTH	1	22	2N	8E	COAL	7531	5931	5964		6020

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35029204180000	ROBERSON OIL COMPANY INCORPO	LOGSDON	2	2	1N	8E	COAL	6850	5307	5345	5393	5411
35029203450000	NEWFIELD EXPLORATION MID-CONT	CLYDE-GOSS	1-3	3	1N	9E	COAL	8357	6718	6744	6814	6847
35029206860000	DEVON ENERGY PRODUCTION COM	DOUBLE 5 RANCH	1-18	18	3N	11E	COAL	7900	7460	7486	7574	7630
35029000870000	ATMAR DRILLING	MORGAN	1	2	2N	9E	COAL	8230	6848	6877	6939	6978
35029201570000	LONG & ATTEBERRY INC	A J MARSHELL	1-33	33	3N	10E	COAL	8211	6755	6778	6857	6911
35029200860000	DMS OIL COMPANY	PHILLIPS	1	22	3N	11E	COAL	9682	8306	8325	8413	8479
35029206980000	DEVON ENERGY PRODUCTION COM	ROGERS TRUST	1-24	24	3N	10E	COAL	8072	7118			7292
35029206950000	NEWFIELD EXPLORATION MID-CONT	MAYER	1D-26	26	2N	10E	COAL	8950	8624	8662	8754	8800
35029207110000	NEWFIELD EXPLORATION MID-CONT	COMETTI	1-13	13	2N	11E	COAL	12109	11537	11576	11653	11722
35029207080000	NEWFIELD EXPLORATION MID-CONT	PASQUALI	1-36	36	3N	10E	COAL	8270	7950	7972	8045	8128
35029207230000	NEWFIELD EXPLORATION MID-CONT	ENNIS	1-17	12	2N	11E	COAL	12258	11771	11810	11893	11968
35029207270000	NEWFIELD EXPLORATION MID-CONT	SMITH	1-9	9	2N	11E	COAL	11744	11206	11242	11328	11404
35029203120000	SUN	HAMILTON UNIT	1-8	8	3N	9E	COAL	6470	5149	5176	5243	5282
35029200920000	DUNCAN WALTER	COALGATE TOWNS	1	26	1N	10E	COAL	9574	8138	8163	8212	8245
35029200910000	COLINE OIL CORP	GRIMES	1	34	3N	11E	COAL	9888	8412	8445	8519	8579
35029200900000	AZTEC O&G CO	JONES	1	5	1S	10E	COAL	7952	6292			6407
35029200600000	WOODS PETRO CORP	MOWDY	1	6	1S	10E	COAL	7123	5308			5459
35029200570000	SUN	R H CRIM	1	17	1N	11E	COAL	11632	9846			9963
35029207130000	DEKA EXPLORATION INCORPORATE	DOUBLE 5 RANCH	3-8	8	3N	10E	COAL	5898	5606	5641	5707	5744
35061210370000	HANNA OIL & GAS COMPANY	GRACE	1	36	9N	18E	HASKELL	5575	5479			
35061206830000	SERVICE DRILLING CO	BARBEE	1-13	13	9N	18E	HASKELL	4929	4678	4720		4736
35061210730000	QUESTAR EXPLORATION & PRODUC	BROWN L	2	33	9N	18E	HASKELL	6007	5932	5963		5982
35061210720000	QUESTAR EXPLORATION & PRODUC	WAGNON `A`	2	4	8N	18E	HASKELL	6335	6045	6081		6098
35061216190000	HANNA OIL & GAS COMPANY	HIGH FALUTIN	1	25	9N	18E	HASKELL	5546	5459	5494		5509
35061216610000	DYNE EXPLORATION COMPANY	BIGGER	1-18	18	9N	19E	HASKELL	4775	4563	4591		4605
35061213230000	QUESTAR EXPLORATION & PRODUC	BROWN L	3	33	9N	18E	HASKELL	5854	5845			
35061200530000	REDWINE RESC INCORPORATED	FENTON	1	17	8N	21E	HASKELL	6635	6441			6519
35061208320000	PENN VIRGINIA MC OPERATING LLC	TYLER	1	3	9N	19E	HASKELL	4211	3992	4015		4025
35061207300000	TXO	PARKS `F`	1	9	9N	19E	HASKELL	4375	4247			4292
35061207120000	MUSTANG FUEL CORPORATION	HALL `K`	1	14	9N	19E	HASKELL	4500	3967			3992
35061206620000	SERVICE DRILLING CO	GEORGINA	1-10	10	9N	19E	HASKELL	4700	4123			4159
35061206510000	PENN VIRGINIA MC OPERATING LLC	CASON	1-11	11	9N	19E	HASKELL	4518	4061			4095
35061206500000	TXO	PARKS `E`	1	9	9N	19E	HASKELL	4363	4263			4309
35061206400000	EARLSBORO ENERGIES	HALL-BUTLER	1-14	14	9N	19E	HASKELL	4600	4147			4193
35061206170000	DYNE EXPLORATION COMPANY	HANLEY	1-18	18	9N	19E	HASKELL	4810	4637			4685
35061204810000	OLD DOMINION OIL	SEWELL	1	20	9N	19E	HASKELL	4575	4360			4407
35061204340000	XTO ENERGY INCORPORATED	BIGGER	1-74	7	9N	19E	HASKELL	4600	4431			4471
35061204410000	SAMSON	TIMMONS	1	36	10N	22E	HASKELL	7940	7819	7847		7856
35061213830000	SEDNA ENERGY INCORPORATED	BURRIS RANCH	1	5	9N	23E	HASKELL	6634	6561			
35061212600000	HOOVER-WILSON EXP&PR	MILLS	1	8	9N	23E	HASKELL	6500	6108			6154
35061216470000	BEAR PRODUCTIONS INCORPORATE	BURRIS	1-18	18	9N	23E	HASKELL	6321	6090			6141
35061204960000	NICHOLS PETRO	BALLARD	1	33	10N	23E	HASKELL	6800	6717	6744		6760
35061201870000	HALL BROOKS OIL	PORTER	1	19	10N	23E	HASKELL	6640	6461	6491		6510
35061202830000	HANNA O&G CO	EMACHAYA	1	30	9N	19E	HASKELL	5800	5600			5620
35061202780000	HANNA OIL & GAS COMPANY	WAGON WHEEL	1	1	8N	18E	HASKELL	6647	6387	6430		6445
35061202670000	HANNA OIL & GAS COMPANY	WAGNON HILL	1	36	9N	18E	HASKELL	6483	6294	6330		6345
35061202120000	LEAR PETRO CORP	BAILES	1	4	8N	21E	HASKELL	5479	5125			5164
35061200720000	FERGUSON OIL	ROBERTSON	1	15	8N	21E	HASKELL	7556	7446			7526
35061200660000	CALVERT FUNDS	DYER	1	35	10N	23E	HASKELL	6652	6347			6403
35061207030000	TXO	BAILES `A`	1	4	8N	21E	HASKELL	6088	5119	5154		5191
35061206870000	JACO ENERGY COMPANY INCORPOR	CARTER `C`	1	4	8N	19E	HASKELL	7000	6797	6824		6843
35061206770000	TXO	EATON	1	29	9N	19E	HASKELL	5925	5725	5759		5772

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35061206680000	MUSTANG FUEL CORPORATION	LEE `K`	1	21	9N	19E	HASKELL	4460	4118			4164
35061206660000	SPECTRA ENERGY	SATTERFIELD	1-26	26	9N	19E	HASKELL	5047	4850			4896
35061206640000	BP AMERICA PRODUCTION COMPAN	MITCHELL `N`	1	2	8N	19E	HASKELL	7200	6942	6971		6991
35061206590000	TXO	UNDERWOOD	1	33	9N	19E	HASKELL	7229	7000			7048
35061206580000	TXO	QUICK `C`	1	26	9N	19E	HASKELL	6900	6537	6571		6584
35061206540000	SAMSON	HUGGINS	1	4	8N	19E	HASKELL	7140	6941			6995
35061206420000	WHITMAR EXPL CO	CESAR	1-32	32	9N	19E	HASKELL	7225	6978	7012		7034
35061206350000	SPECTRA ENERGY	GRANT	1	27	9N	19E	HASKELL	5888	5596	5627		5645
35061206300000	ROYE REALTY&DEV INC	CHAD	1	24	8N	20E	HASKELL	6790	6575	6614		6661
35061206150000	TXO	GEORGIANA	1	10	8N	19E	HASKELL	6800	6698			
35061206140000	BP AMERICA PRODUCTION COMPAN	HISER	1	1	8N	19E	HASKELL	6900	6643	6669		6693
35061206100000	BP AMERICA PRODUCTION COMPAN	BUTLER-COOPER	1	3	8N	19E	HASKELL	7113	6813	6845		6871
35061205950000	ARKLA EXPL CO	WAYCOTT	1	3	9N	22E	HASKELL	6240	5675	5703		5718
35061205450000	PENN VIRGINIA MC OPERATING LLC	MCKIBBON	1	34	9N	19E	HASKELL	7176	6789			6844
35061204320000	SLAWSON DONALD C	PANAMA CREEK	1-7	7	7N	22E	HASKELL	10575	10303	10327	10377	10401
35061208930000	WILLIAMS PRODUCTION MID-CONTIN	ANDERSON	2	29	8N	20E	HASKELL	7020	6680	6725		6771
35061208680000	REDWINE RESC INCORPORATED	SHAW	1	16	8N	21E	HASKELL	6650	6470			6555
35061208450000	SONAT EXPLORATION COMPANY	KERR MCGEE `D`	2	28	9N	22E	HASKELL	6850	6636			6675
35061208430000	REDWINE RESC INCORPORATED	JAMESON	1-36	36	9N	21E	HASKELL	7628	5322			5375
35061208400000	HANNA O&G CO	TETER	1	35	9N	18E	HASKELL	5766	5439	5471		5493
35061600710000	AMBASSADOR OIL	SCOTT C B	1	27	8N	20E	HASKELL	6996	6532	6568		6597
35061600080000	SAMSON RESOURCES COMPANY	HERTJE	1-9	9	7N	20E	HASKELL	8005	8278	8316	8361	8375
35061300730000	EXXONMOBIL	ROBT KASINER UN	1	22	8N	20E	HASKELL	7800	6513			6592
35061212050000	ARKANA OPERATING COMPANY INC	LEWIS	1-26	26	10N	23E	HASKELL	8550	6528	6561		6570
35061211950000	STEPHENS PROD	BURGE	2	31	8N	21E	HASKELL	8007	7704	7734	7791	7800
35061211610000	SEDNA ENERGY INCORPORATED	MCCLARY	1	9	9N	23E	HASKELL	6390	6079			6129
35061211450000	CHESAPEAKE OPERATING INCORPO	HAYES	3-23	23	9N	23E	HASKELL	6250	6037			6093
35061211380000	DMS OIL COMPANY	HAYES	2-23	23	9N	23E	HASKELL	6400	6087			6145
35061211290000	HANNA O&G CO	DOGCREEK	1	35	9N	22E	HASKELL	6264	6152	6188		6205
35061211150000	PETROHAWK OPERATING COMPANY	AVERY	3	26	9N	23E	HASKELL	6305	6181	6217		6249
35061211120000	HANNA OIL & GAS COMPANY	HULSEY MOUNTAIN	1	20	7N	20E	HASKELL	10900	10655	10688		10741
35061211030000	HANNA OIL & GAS COMPANY	SEVEN DEVILS	1-36	36	9N	22E	HASKELL	6286	6158	6198		6212
35061210640000	WYNN-CROSBY INCORPORATED	SPRING MOUNTAIN	1	35	9N	23E	HASKELL	6389	6244			6318
35061210530000	MALPAIS INCORPORATED	COMER	1	32	9N	23E	HASKELL	6419	6084			6165
35061210520000	CROW CREEK OPERATING LLC	TUCKER	1	34	8N	20E	HASKELL	7202	6799	6835		6862
35061209500000	MUSTANG FUEL CORPORATION	WRIGHT	1-1	1	7N	20E	HASKELL	8300	8177			
35061207650000	HOMESTAKE	GINGLE	1-35	35	10N	23E	HASKELL	7111	6988	7018		7032
35061207070000	CHESAPEAKE OPERATING INCORPO	FOWLER	1	6	8N	21E	HASKELL	5483	5211			5281
35061204070000	ESTORIL PROD	PIXLER	1	15	8N	20E	HASKELL	7560	6478	6518		6549
35061203960000	MUSTANG FUEL CORPORATION	GARTEN	1	33	9N	19E	HASKELL	7275	6956			7025
35061203870000	GEODYNE RES INC	WISE	25-1	25	9N	22E	HASKELL	6275	6155			6209
35061203750000	TXO	ROBERTSON/E/	1	10	8N	21E	HASKELL	6661	6289			6369
35061203730000	SOUTHLAND ROYALTY CO	STUBBLEFIELD	1-11	11	9N	22E	HASKELL	7400	6997	7011		7034
35061203400000	BP AMERICA PRODUCTION COMPAN	MARTINDALE	1	3	8N	19E	HASKELL	7115	6723	6750		6762
35061203340000	CHESAPEAKE OPERATING INCORPO	ANNA MOORE	1	23	10N	23E	HASKELL	9212	8890			8925
35061203050000	TXO	KAYLOR /A/	1	19	8N	21E	HASKELL	6750	6516			6601
35061205350000	TAG TEAM RESOURCES LLC	WEBB	1	35	9N	19E	HASKELL	7250	6908	6931		6980
35061205100000	SPECTRA ENERGY	SMITH	1	34	9N	19E	HASKELL	7318	7113			7146
35061204780000	WILLIFORD ENERGY CO	WILSON	1	2	8N	21E	HASKELL	6719	6345	6380		6421
35061204370000	HADSON PET USA INC	BUTLER	1-8	5	8N	19E	HASKELL	7338	7072			7127
35061200430000	MONSANTO COMPANY	HALL JIM	1	10	8N	21E	HASKELL	6710	6553			6639
35061200150000	REDWINE RESC INCORPORATED	BUNDY	1	36	9N	21E	HASKELL	5600	5370			5430

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35061201380000	DIAMOND SHAMROCK	VERLN WILLIAMS E	1-10	10	7N	20E	HASKELL	9080	8349	8386		8439
35061201350000	QUESTAR EXPLORATION & PRODUC	CARLILE	1	29	9N	22E	HASKELL	5699	5253			5295
35061201340000	DYCO PETROLEUM CORPORATION	PIXLER B	1	14	8N	20E	HASKELL	7460	6526	6565		6600
35061201130000	MUSTANG DRLG INC	ROYE-KIRKLAND	1-19	19	8N	21E	HASKELL	6820	6598			6682
35061211350000	SEDNA ENERGY INCORPORATED	BURRIS	2	19	9N	23E	HASKELL	6238	5961	5985		6011
35061206060000	WHITMAR EXPL CO	BUTLER	1-12	12	8N	19E	HASKELL	7015	6691	6718		6747
35061217810000	HANNA OIL & GAS COMPANY	LITTLE KNOB	1	33	9N	19E	HASKELL	7350	6892			6941
35061300790000	QUESTAR EXPLORATION & PRODUC	MATHEWS GLADYS	1	8	7N	20E	HASKELL	8559	8328	8363	8397	8409
35061213040000	STEPHENS PROD	HARRIS K R	4	24	9N	23E	HASKELL	7790	5952			6008
35061202740000	HANNA O&G CO	BEAR CREEK	1	31	9N	19E	HASKELL	6666	6083	6114		6131
35061210710000	STEPHENS PRODUCTION COMPANY	MOSBY HAROLD	1	16	9N	23E	HASKELL	6432	6058			6107
35061214530000	QUESTAR EXPLORATION & PRODUC	SPEARS	1	6	8N	19E	HASKELL	7115	7002	7035		7050
35061215620000	GLB EXPLORATION INCORPORATED	MCGREW	1	14	9N	22E	HASKELL	6783	6681	6698		6725
35061213700000	STEPHENS PRODUCTION COMPANY	FOSTER J C	2	11	9N	23E	HASKELL	6440	5904			5954
35061218890000	CHK	BEAVER MOUNTAI	#1-14	14	8N	20E	HASKELL	6945	6585	6632		6660
35061219350000	SEDNA ENERGY INCORPORATED	FENTON	2	17	8N	21E	HASKELL	6730	6378	6411	6461	6472
35061219940000	SEDNA	FENTON	3	17	8N	21E	HASKELL	6820	6430			6511
35061212430000	STEPHENS PRODUCTION COMPANY	SIMPSON EVANS	4	34	9N	23E	HASKELL	6638	6042	6071		6121
35061211070000	STEPHENS PRODUCTION COMPANY	EVANS	2	34	9N	23E	HASKELL	6350	6188	6227		6264
35061208880000	EXXONMOBIL	HOLT N.C.	2-33	33	9N	23E	HASKELL	7943	6080			6166
35061211370000	HOOVER-WILSON EXP&PR	TATE	2	30	9N	22E	HASKELL	5685	5302	5336		5345
35061221560000	SEDNA	WILLIAMS	2-14	14	8N	19E	HASKELL	7500	6671	6700		6729
35061220660000	SEDNA ENERGY INCORPORATED	BUTLER	2-11	11	8N	19E	HASKELL	7264	6581	6605		6635
35061600660000	AMBASSADOR OIL	W M DOBY UNIT	1	9	8N	20E	HASKELL	6990	6854	6888		6915
35061600850000	LE FLORE G&E	NELSON HEIRS	1	11	8N	22E	HASKELL	6752	6591			6670
35061208150000	CHESAPEAKE OPERATING INCORPO	TREASURE COVE	29-A	29	9N	18E	HASKELL	8500	6009	6038		6054
35061202720000	HANNA OIL & GAS COMPANY	WAGON FIELD	1	35	9N	18E	HASKELL	5803	5474	5506		5526
35061206370000	TXO	WAGNON `A`	1	15	8N	18E	HASKELL	7000	6599	6634		6660
35061206210000	TXO	BLAND	1	16	8N	18E	HASKELL	6750	6588	6625		6644
35061205010000	HANNA O&G CO	WAGNON RIDGE	1	24	9N	18E	HASKELL	6100	5855	5891		5911
35061205540000	JOHNSON L E	ROSSO	2-23	23	9N	20E	HASKELL	5138	4949			5001
35061204050000	GULF OIL CORP	NEAL ETAL	1-6	6	9N	21E	HASKELL	5215	4928	4953		4964
35061203790000	D F W PETRO INC	GARLAND	1-5	5	9N	21E	HASKELL	5240	5113			5153
35061206780000	CHESAPEAKE OPERATING INCORPO	ROYE-ROYE	#1-25	25	9N	20E	HASKELL	4951	4823			4888
35061206750000	CHESAPEAKE OPERATING INCORPO	HICKMAN	#2-32	32	9N	21E	HASKELL	5186	4921			4988
35061206430000	CHESAPEAKE OPERATING INCORPO	PRUITT VALLEY	1	31	9N	21E	HASKELL	5035	4796	4835		4863
35061206250000	CHESAPEAKE OPERATING INCORPO	ROSE	#1-30	30	9N	21E	HASKELL	4984	4738	4772		4802
35061208950000	PENN VIRGINIA MC OPERATING LLC	DANIEL	1	10	9N	19E	HASKELL	4132	4049			4083
35061208940000	CROW CREEK OPERATING LLC	CASON	1A-11	11	9N	19E	HASKELL	4249	4007	4031		4041
35061208660000	CHESAPEAKE OPERATING INCORPO	ZEHNDER	1	29	9N	21E	HASKELL	5401	4789			4857
35061207510000	CHESAPEAKE OPERATING INCORPO	WILSON	1	26	9N	20E	HASKELL	5090	4947	4986		5007
35061207130000	CHESAPEAKE OPERATING INCORPO	BOREL	#1-34	34	9N	20E	HASKELL	5303	5032	5070		5091
35061207080000	CHESAPEAKE OPERATING INCORPO	PERRY	1	35	9N	20E	HASKELL	5128	4948	4985		5014
35061206970000	CHESAPEAKE OPERATING INCORPO	SCROGGINS	1	1	8N	20E	HASKELL	5800	5533			5607
35061206890000	CHESAPEAKE OPERATING INCORPO	PHILLIPS-ROBERTS	1	32	9N	21E	HASKELL	5450	5172			5245
35061206880000	CHESAPEAKE OPERATING INCORPO	LACKEY	#2-36	36	9N	20E	HASKELL	5175	4849			4918
35061213480000	ENERGAS CORP	SELRAHC	1-2	2	8N	20E	HASKELL	5719	4980			5013
35061216310000	CHESAPEAKE OPERATING INCORPO	BROWN	27-4	27	9N	20E	HASKELL	5226	4873	4907		4930
35061217000000	HOGBACK EXPLORATION INCORPOR	CROSS	1-22	22	9N	20E	HASKELL	5100	4833			4883
35061218770000	HOGBACK EXPL INC	EDWARDS	1-21	21	9N	20E	HASKELL	5075	4914			4964
35061215170000	CHESAPEAKE OPERATING INCORPO	BAILES	#3#3-5	33	9N	20E	HASKELL	5505	4985	5020		5037
35061215180000	CHESAPEAKE OPERATING INCORPO	FOWLER	29-15	29	9N	21E	HASKELL	5811	5030			5092

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35061215340000	PETROHAWK OPERATING COMPANY	BRYCE JESS	1	28	9N	20E	HASKELL	5100	4841			4889
35061215300000	PITTMAN ALLEN OP LLC	DIXON	19-2	19	9N	21E	HASKELL	5193	4863			4925
35061214910000	CHESAPEAKE OPERATING INCORPO	CHALK	30-14	30	9N	21E	HASKELL	5170	4767	4801		4828
35061214980000	CHESAPEAKE OPERATING INCORPO	ROYE	#3#1-3	31	9N	21E	HASKELL	5191	4787	4823		4851
35061219330000	WILDHORSE OPER CO	CHERYL	1	20	9N	19E	HASKELL	4509	4272	4297		4317
35061216880000	YALE OIL	HILMA DOT	1-19	19	9N	20E	HASKELL	5053	4790	4829		4836
35061217010000	DYNE EXPL CO	CROSS ZOE ANN	1-16	16	9N	20E	HASKELL	5102	4809	4843		4857
35061212120000	XTO ENERGY INCORPORATED	WHITEFIELD	2-13	13	9N	19E	HASKELL	6718	4589			4630
35061202620000	XTO ENERGY INCORPORATED	SATTERFIELD	2-18	18	9N	20E	HASKELL	5598	4625	4657		4665
35061202580000	NATIONAL OIL CO THE	CARIKER	1	14	9N	19E	HASKELL	5000	4794			4838
35061202380000	JOHNSON E LYLE INCORPORATED	COLLEGE UNIT	1	15	9N	20E	HASKELL	5200	4923			4972
35061202370000	BTA	7894 JV-P STIGLER	1	24	9N	19E	HASKELL	5550	4733			4783
35061202100000	TXO	QUICK	1	20	9N	20E	HASKELL	15004	4869			4919
35061202080000	XTO ENERGY INCORPORATED	KIRK	1-7	7	9N	20E	HASKELL	4876	4691			4732
35061202070000	XTO ENERGY INCORPORATED	CANTRELL	1-9	9	9N	20E	HASKELL	4875	4692	4721		4730
35061204270000	EARLSBORO O&G CO INC	MCCLARY	1-11	11	9N	20E	HASKELL	5386	5001	5025		5047
35061204150000	MUSTANG PROD CO	SHERLEY	1-30	30	9N	20E	HASKELL	5046	4880	4921		4934
35061203880000	XTO ENERGY INCORPORATED	QUICK	3-16	16	9N	20E	HASKELL	4960	4717			4768
35061203270000	PENN VIRGINIA MC OPERATING LLC	LILLARD	1	17	9N	19E	HASKELL	4600	4285			4333
35061203030000	XTO ENERGY INCORPORATED	SPEARS	1-24	24	9N	19E	HASKELL	4860	4651			4697
35061210320000	XTO ENERGY INCORPORATED	HOLLINGSHEAD	22#2	22	9N	19E	HASKELL	4515	4048			4091
35061208760000	SONAT	ROGERS `D`	3	15	9N	19E	HASKELL	4325	4185			4229
35061208520000	GUNGOLL HENRY	TATE	1-15	15	9N	20E	HASKELL	5200	4912	4947		4962
35061207610000	SERVICE DRILLING CO	CASON	2-11	11	9N	19E	HASKELL	4385	4118	4144		4155
35061206710000	CHESAPEAKE OPERATING INCORPO	BUTLER `H`	1	15	9N	19E	HASKELL	4413	3966			4005
35061206480000	XTO ENERGY INCORPORATED	SPEARS	2-24	24	9N	19E	HASKELL	5163	4704			4751
35061206460000	MUSTANG FUEL CORPORATION	ROGERS `D`	2	15	9N	19E	HASKELL	5324	4096			4135
35061206380000	MUSTANG FUEL CORPORATION	WREN `A`	1	16	9N	19E	HASKELL	4791	4121	4154		4169
35061206270000	TXO	SANDAU	1	21	9N	19E	HASKELL	4456	4167	4193		4210
35061206200000	MARATHON OIL COMPANY	ROGERS /D/	1	15	9N	19E	HASKELL	4448	4173			4241
35061206190000	EOG RESOURCES INCORPORATED	HOLLINGSHEAD	22-1	22	9N	19E	HASKELL	4778	4136			4183
35061205940000	CHESAPEAKE OPERATING INCORPO	LEDBETTER 1-25	1	25	9N	19E	HASKELL	5028	4741	4771		4785
35061205780000	CHESAPEAKE OPERATING INCORPO	GOLLON	#1-23	23	9N	19E	HASKELL	5000	4764	4800		4810
35061201950000	XTO ENERGY INCORPORATED	WHITEFIELD	1-13	13	9N	19E	HASKELL	5042	4595			4639
35061201400000	KIRBY PETRO CO	POWER	1-19	19	8N	21E	HASKELL	6665	6491			6581
35061600800000	LYONS & LYONS INCORPORATED	WRIGHT	1	34	8N	21E	HASKELL	8743	7776	7809	7863	7874
35061208750000	ARAXAS	BURRIS	1-33	33	10N	22E	HASKELL	4190	3866			3901
35061206790000	CHESAPEAKE OPERATING INCORPO	BAILES	#1-33	33	9N	20E	HASKELL	5222	4967	5000		5020
35061203410000	WYNN CROSBY OPERATING LP	FITZER	1	4	9N	18E	HASKELL	6000	5703	5739		5755
35061212900000	DERRICK RESOURCES INCORPORAT	WELLS JOHN	1-28	28	9N	21E	HASKELL	5305	4994	5030		5060
35061220650000	BP AMERICA PRODUCTION COMPAN	ARTHUR	1	12	7N	22E	HASKELL	14100	13789			13888
35061206960000	CHESAPEAKE OPERATING INCORPO	TUCKER	#1-32	32	9N	20E	HASKELL	5014	4758	4793		4812
35061202020000	TAYLOR JOHN A	FLANGAN	1	15	9N	21E	HASKELL	4950	4829			4883
35061200560000	CHESAPEAKE OPERATING INCORPO	DIXON	1	30	9N	21E	HASKELL	5001	4831			4897
35061209050000	HWA OPERATING	PALMER	1	3	10N	21E	HASKELL	4355	2048			2076
35061208070000	TERRA RES	BLAYLOCK	1-16	16	9N	22E	HASKELL	5847	5667	5680		5714
35061203990000	GRAHAM O&G LTD	PRUITT VALLEY UN	1	34	9N	20E	HASKELL	5591	4942			5001
35061203830000	FUNK EXPL INC	ALUMBAUGH	1-10	10	9N	21E	HASKELL	4820	4658			4691
35061203520000	EARLSBORO O&G CO INC	LONNIE DEE TATE	1	28	10N	22E	HASKELL	4299	4093			4116
35061203080000	FUNK EXPL INC	STEPHENS BLDG	1	11	9N	21E	HASKELL	5130	4609			4648
35061206320000	PROSPECTIVE INV&TRD	DICKSON	1-11	11	9N	21E	HASKELL	4810	4689			4732
35061204970000	UNIT	TYLER	1	10	10N	22E	HASKELL	5200	4933	4957		4966

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35061202540000	OLD DOMINION OIL	SATTERFIELD	1	28	9N	19E	HASKELL	6197	5819			5872
35061200910000	ARKLA	C J SHAW ETAL	1	19	9N	20E	HASKELL	4972	4792			4838
35061200790000	ARKLA	LUTHER FENTON	1	22	9N	20E	HASKELL	5113	4954			5005
35061200360000	PETR RES CO	VANCE	1	32	9N	20E	HASKELL	4965	4795	4829		4846
35061219180000	WASHITA O&G	BAILES	1-32	32	10N	21E	HASKELL	5065	4828	4848		4859
35061220860000	WASHITA O&G	HALL	1-10	10	9N	21E	HASKELL	4880	4656	4684		4699
35061222320000	HANNA O&G CO	WALLACE	1	27	9N	19E	HASKELL	5575	5107			5150
35061222460000	SEDNA ENERGY INCORPORATED	FOWLER	2-17	17	8N	20E	HASKELL	7085	6640	6678		6703
35061222390000	SEDNA ENERGY INCORPORATED	ANDERSON	1-18X	18	8N	21E	HASKELL	6750	6535	6576		6615
35063227560000	AGATE PETROLEUM INC	STAFFORD	1-36	36	9N	8E	HUGHES	4255	4055			4122
35063233080000	DOUGLASS DIETZ&DALEY	NAOMIA	1-7	7	8N	9E	HUGHES	4400	3974	4000		4012
35063232780000	TILFORD PINSON EXPLORATION	STAFFORD	1-7	7	8N	9E	HUGHES	4435	3960	3988		3995
35063222610000	KAHAN & ASSOCIATES INCORPORAT	CHAPMAN	3	31	9N	9E	HUGHES	4110	3996			4039
35063204920000	YALE OIL ASSOCIATION INCORPORA	CHAPMAN	1	36	9N	8E	HUGHES	4410	4027			4071
35063220940000	CHEVRON TEXACO	BAKER `W`	10-4	4	9N	11E	HUGHES	4031	3494	3523		3531
35063216090000	MCQUEEN ED	KILMER	1-4	4	9N	11E	HUGHES	4370	3553	3576		3584
35063224730000	CHEVRON TEXACO	SUTTON `A`	12SWD	3	9N	11E	HUGHES	4030	3443	3463		3480
35063215310000	STAR RES	RAINBOLT	1-11	11	9N	11E	HUGHES	4445	4208	4235		4254
35063221440000	BOSWELL ENERGY CORP	SANDLIN	1-5	5	9N	11E	HUGHES	4323	3617	3639		3656
35063226510000	SOUTHERN RESOURCES	PEEL	1-5	5	9N	11E	HUGHES	3912	3633	3650		3665
35063234840000	NEW DOMINION LLC	WETUMKA SWD	1	7	9N	11E	HUGHES	6339	3657	3673		3687
35063226540000	FLEET FRANK T	STOVER	1-2	2	5N	8E	HUGHES	5700	4338			4578
35063236320000	NEWFIELD EXPLORATION MID-CONT	SUMMERS	1D-27	27	4N	11E	HUGHES	8575	8210	8240	8328	8375
35063236560000	CHESAPEAKE OPERATING INCORPO	SELLERS	#3-35	35	4N	11E	HUGHES	8770	8513	8556	8627	8694
35063202420000	HALL-JONES OIL	BOREN	1	36	6N	9E	HUGHES	6008	5081			5268
35063217980000	JORDAN O&G CO	RUBY	1-18	18	6N	9E	HUGHES	6008	4788	4836	4918	4980
35063206280000	ROARK J H	POOL	1-11	11	5N	9E	HUGHES	6500	5257	5305	5424	5487
35063300620000	BETTIS BOYLE & STOVALL	CHRIS PEARSON	1	19	5N	10E	HUGHES	6492	5441			5617
35063209680000	K W B OIL PROPERTY	CHAPMAN	1	13	8N	8E	HUGHES	4396	3976			4020
35063216970000	PA ENERGY	LONDON	1	23	6N	10E	HUGHES	6227	5354	5387	5472	5520
35063225440000	SOUTHERN RESOURCES INCORPOR	EDWARDS	1-9	9	6N	10E	HUGHES	6080	5253	5283	5345	5375
35063225340000	CROWN ENERGY COMPANY	SKINNER-DAVIS	5	12	6N	9E	HUGHES	5350	4713	4745	4812	4867
35063231810000	TRIPOWER RESOURCES INCORPOR	DUSTIN	2-7	7	5N	10E	HUGHES	5690	5324	5357	5455	5502
35063200910000	PUBLISHERS PETRO	PICKLE	1-7	7	5N	10E	HUGHES	4724	5372	5409	5502	5548
35063221620000	NOBLE ENERGY INCORPORATED	SPIKER	1	28	5N	10E	HUGHES	6827	5598	5625	5702	5757
35063236210000	R K R EXP	TOMMY JOE EAST	1	8	8N	12E	HUGHES	4330	4198	4216	4251	4270
35063236770000	HUNTON OIL & GAS CORPORATION	KOBE	1	5	8N	12E	HUGHES	4306	4164	4182	4211	4227
35063235280000	YALE OIL ASSOCIATION INCORPORA	MARBET LLC	40	15	8N	12E	HUGHES	4225	4768	4786	4821	4831
35063225220000	BAILEY PET CORP	TURNER PARKS	1	34	8N	12E	HUGHES	5060	4966			
35063225110000	FAITH PETRO INC	KEITH	I	27	8N	12E	HUGHES	5172	4849	4870	4904	4923
35063225020000	CRYSTAL ENERGY INCORPORATED	HAMILTON	2	32	4N	9E	HUGHES	6481	5184	5215	5273	5316
35063206430000	TAYLOR JOHN A	MCKOY HEIRS	1	33	4N	9E	HUGHES	5739	5303	5327	5395	5436
35063213130000	HILL OIL & GAS COMPANY	NOEL	2	27	4N	9E	HUGHES	6825	5353	5382	5455	5500
35063213600000	HILL OIL COMPANY INCORPORATED	WILSON	4	27	4N	9E	HUGHES	6468	5294	5319	5395	5443
35063217080000	ABRAXAS	HAMILTON	1	33	4N	9E	HUGHES	6202	5265			5376
35063214530000	HILL OIL & GAS COMPANY	LAWSON	2	35	4N	9E	HUGHES	5927	5363	5390	5468	5512
35063237280000	TREK RESOURCES INCORPORATED	TUCKER	A 26A-4	26	4N	9E	HUGHES	5786	5524	5551	5621	5674
35063237120000	CONTINENTAL RESOURCES INCORP	PRICE	A 22-7-10	22	4N	9E	HUGHES	6114	5851	5887	5958	6011
35063211760000	DAVIS BROTHERS OIL PRODUCERS	FIFE	1	14	9N	12E	HUGHES	4388	4137	4157		4181
35063220080000	CUESTA PETROLEUM INCORPORATE	CHAPMAN ESTATE	30-3	30	9N	9E	HUGHES	4060	3959	3991		4004
35063220020000	THOMPSON JOE L INC	FREAM	1	29	9N	9E	HUGHES	4300	4057	4088		4102
35063220000000	KAHAN & ASSOCIATES INCORPORAT	BROWN JOE	1	30	9N	9E	HUGHES	4100	3987	4016		4027

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35063213680000	CHEYENNE PET CO	FRANK	1-27	27	9N	9E	HUGHES	4030	3951	3975		3983
35063223000000	KLO	CONNER	2	26	5N	9E	HUGHES	6434	5382	5425	5526	5595
35063226960000	RWIT COMPANY INCORPORATED	BADGER MELINGA	25-1	25	5N	9E	HUGHES	6550	5463	5504	5618	5666
35063222970000	KLO	GRAY J D	1	23	5N	9E	HUGHES	6387	5325			5504
35063222660000	GOMACO INC	MYERS	1	26	5N	9E	HUGHES	6632	5358	5401	5501	5560
35063202010000	DAUBE CO	WEST	1	26	5N	9E	HUGHES	6500	5447	5479	5583	5636
35063217750000	HALLIBURTON OIL PRODUCING COM	OLIPHANT	1	18	9N	9E	HUGHES	4315	3952	3977		3984
35063215920000	OLIPHANT GEORGE	OLYMPIC	1-18	18	9N	9E	HUGHES	4120	3975	4005		4012
35063208030000	CHEYENNE PETROLEUM COMPANY	STEELE	1-19	19	9N	9E	HUGHES	4125	4033			4074
35063210330000	JAY PETROLEUM INCORPORATED	DIAMOND	1	26	8N	10E	HUGHES	4554	4204			4280
35063210180000	OPERATING COMPANY THE	MEADOWLAND	1-ML	14	8N	10E	HUGHES	4140	4046	4064		4103
35063211860000	UTICA DRILLING & EXPLORATION IN	CALL YOUR BANKE	1CYB	27	8N	10E	HUGHES	4390	4104	4122	4165	4178
35063211690000	JANUARY INVESTMENTS LLC	OLA PRICE	3	9	7N	10E	HUGHES	4723	4356	4370	4421	4443
35063227990000	CONTINENTAL OPERATING COMPAN	DARKS	1-21	21	8N	11E	HUGHES	4850	4389	4413	4456	4464
35063225630000	SOPAC	SUMMERS	2	34	8N	10E	HUGHES	4562	4218			4301
35063225550000	PRICE AUBREY	SUMMERS	1	34	8N	10E	HUGHES	4700	4225	4242	4296	4304
35063229590000	GRANT PETROLEUM CORPORATION	ROBERT	1	5	7N	10E	HUGHES	4620	4328	4355	4411	4443
35063222640000	C N OPRTNG CO(A CRP)	GRIDER	1	5	8N	10E	HUGHES	4044	3604	3619		3641
35063219790000	SAMEDAN OIL CORP	STOTTS	1-32	32	8N	10E	HUGHES	5300	4266	4298	4368	4384
35063218200000	IREX CORP	NOLEN	1	5	7N	10E	HUGHES	4700	4337	4363	4420	4449
35063215290000	GENERAL PETROLEUM INCORPORAT	BUCK	1	21	9N	10E	HUGHES	4253	3716	3741		3748
35063211130000	XANADU EXPLORATION COMPANY	BUSHWACKER	1	9	7N	10E	HUGHES	4886	4348			4449
35063235640000	PRIMARY NAT RES INC	MARSEY	2-26	26	9N	10E	HUGHES	4051	3837	3863		3874
35063235660000	CHESAPEAKE OPERATING INCORPO	BARGER	#1-26	26	9N	10E	HUGHES	4015	3794	3820		3835
35063235770000	CHESAPEAKE OPERATING INCORPO	BRAY	3	25	9N	10E	HUGHES	4000	3772	3802		3815
35063224810000	MARBET LLC	HICKORY HILLS	1	21	5N	11E	HUGHES	7500	6525	6562	6628	6677
35063228950000	T K DRILLING CORPORATION	MCKEE	1A-29	29	6N	11E	HUGHES	6270	5800	5828	5892	5925
35063205760000	PA ENERGY	WIRICK	1	7	5N	11E	HUGHES	6371	6191			
35063207770000	JOSIE OIL & GAS COMPANY	BULLING	1	2	7N	8E	HUGHES	4322	3959			4022
35063229840000	PATTERSON GEORGE E	ALEXANDER	8-1	8	6N	8E	HUGHES	6000	3868			4066
35063226080000	JORDAN OIL & GAS CO	JORDAN-DIAMOND	1-4	4	6N	8E	HUGHES	4390	4069	4099	4195	4257
35063225050000	DMND HRRY H INC	DAVID	1	28	7N	8E	HUGHES	4547	4017	4055	4143	4203
35063222560000	CANTRELL A B	JERRY	1	13	7N	9E	HUGHES	4955	4838	4862	4909	4959
35063220970000	KLO	CHAPMAN	1	10	7N	9E	HUGHES	4720	4542	4566	4622	4652
35063220030000	TCINA INCORPORATED	FORAN JACK	1	5	5N	8E	HUGHES	4552	4120	4165	4245	4336
35063219950000	HARDWICK OIL COMPANY	SCOTT	1-22	22	7N	9E	HUGHES	5200	4775	4800	4879	4923
35063219740000	JORDAN OIL & GAS CO	MOORE	1-35	35	7N	8E	HUGHES	4745	4368			4537
35063218690000	PAWNEE PETROLEUM CO	BEVO	1	11	7N	8E	HUGHES	4500	4125	4150	4190	4215
35063217390000	GLENCO PET /OK/	PATTI BEAR	1	11	7N	9E	HUGHES	5640	4726	4750	4808	4843
35063217010000	C & S EXPL INC	SHIELDS	1	14	7N	9E	HUGHES	4938	4746	4770	4833	4870
35063216850000	RUFFEL L OIL & GAS CORPORATION	THOMPSON	2	3	7N	8E	HUGHES	4320	3966	3988	4026	4046
35063216370000	JOSIE OIL & GAS COMPANY	HARVEY	1	3	7N	8E	HUGHES	4305	3934	3957	4006	4025
35063223090000	KLO	MORGAN	1	3	7N	8E	HUGHES	4312	3895			3973
35063222220000	DAVCO PRODUCTIONS INCORPORAT	MAGGIE	1	31	8N	9E	HUGHES	4545	4059	4079		4116
35063215390000	ECCO ENERGY	SUZIE	1	27	7N	8E	HUGHES	4500	4116	4149	4227	4272
35063215010000	JOHNSON-GIPSON	V V HARRIS	1-A	5	6N	8E	HUGHES	4450	4078	4117	4204	4276
35063214550000	SUN OIL COMPANY	UEL WALKER	1	15	7N	8E	HUGHES	4610	4182			4321
35063214040000	JOHNSON-GIPSON	LETA M CHAPMAN	2-A	10	7N	8E	HUGHES	4310	3980	4004	4062	4092
35063213500000	SWADLEY R W & J	MERRIMAN	1-31	31	8N	9E	HUGHES	4430	4061			4112
35063213300000	AMERCN PETRO MINER	CHAPMAN	2-A	10	7N	8E	HUGHES	4280	4079	4107	4166	4204
35063213290000	SWADLEY R W & J	CHAPMAN	10-3	10	7N	9E	HUGHES	4710	4556	4582	4629	4656
35063213220000	COOK OPERATING COMPANY	LETA M CHAPMAN	2	10	7N	8E	HUGHES	4140	3925			4047

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35063212560000	MASSAD GEO H ETAL	MASSAD	1	2	7N	8E	HUGHES	4445	4076	4092	4150	4191
35063212500000	COOK OPERATING COMPANY	LETA M CHAPMAN	1-10	10	7N	8E	HUGHES	4270	3940	3958	4018	4052
35063212340000	FLINT J A & ASSOCIATES	GREENWOOD	2	11	7N	8E	HUGHES	4467	4078			4198
35063208870000	GEODYNE RES INC	GUNSLINGER	17-1	17	7N	8E	HUGHES	4202	4055	4080	4141	4179
35063233300000	ATHABASCA ENERGY CORPORATION	LYDA	10-1	10	7N	9E	HUGHES	4850	4507	4533	4586	4616
35063216950000	OAKLAND PETROLEUM OPERATING (	BERTHA	1	20	8N	9E	HUGHES	4470	4141	4173		4187
35063235490000	CUESTA PETROLEUM INCORPORATE	BARNES	1	19	8N	9E	HUGHES	4301	4009	4039		4050
35063218060000	DOMINION OKLAHOMA TEXAS EXPL	PEARL	1-33	33	8N	9E	HUGHES	4650	4303	4329	4372	4392
35063216900000	BUCK HARRY F&MAYO RL	PERRY	1-36	36	7N	8E	HUGHES	4919	4602	4640	4720	4766
35063236980000	TILFORD PINSN	GORDON	1-6	6	6N	10E	HUGHES	5080	4621	4659	4723	4771
35063218250000	DESHIELDS OIL & GAS INCORPORAT	JESSICA B	1	32	7N	10E	HUGHES	5300	4746	4779	4854	4895
35063217490000	CROWN ENERGY COMPANY	JASON /B/	1	6	6N	10E	HUGHES	5717	4627			4791
35063227270000	DEL PETRO CO	SMITH	31-2	31	7N	10E	HUGHES	5570	4727	4758	4821	4876
35063225120000	TIDE WEST OIL CO	ROBERTS	1	31	7N	10E	HUGHES	5527	4596	4620	4683	4739
35063222850000	BALLEW O&G PROD	MS	1	31	7N	10E	HUGHES	5057	4806			4940
35063222840000	HALLWOOD PETROLEUM INCORPOR	B.E.D.	1	6	6N	10E	HUGHES	5748	4826			4990
35063219970000	CROWN ENERGY COMPANY	BANKS	2	6	6N	10E	HUGHES	5361	4708	4749	4827	4866
35063219660000	WILLIAMS REED OPERATING COMPA	MARIE JACKIE	1	6	6N	10E	HUGHES	5389	4665	4705	4782	4824
35063237360000	CROWN ENERGY COMPANY	PHILLIPS	1-12	12	6N	9E	HUGHES	5000	4642	4671	4752	4803
35063230810000	MARSH OIL & GAS COMPANY	BELL	8-2	8	7N	10E	HUGHES	4612	4329	4353	4419	4445
35063227980000	MARSH O&G INC	BELL	8-1	8	7N	10E	HUGHES	4542	4338	4364	4423	4445
35063214510000	GOMACO INC	LANKFORD	2-7	7	7N	10E	HUGHES	5299	4311	4343	4399	4434
35063227460000	GEOEX RES	CHERRY	16A	16	7N	10E	HUGHES	4845	4478	4503	4547	4573
35063201850000	MILNE LEWIS JOEL	F G M	1	23	8N	8E	HUGHES	4246	3873			3922
35063204770000	RESEARCH OIL COMPANY	BARNARD	13	24	8N	8E	HUGHES	4110	3910	3944		3959
35063228890000	YALE OIL ASSOCIATION INCORPORA	RAMAY	1	31	8N	12E	HUGHES	4865	4569	4595	4632	4656
35063237390000	JAY PETROLEUM INCORPORATED	SANDERS	4	7	7N	12E	HUGHES	5070	4832	4851	4897	4922
35063236780000	PANTHER ENERGY COMPANY	HARRIET	1-28	28	8N	12E	HUGHES	4990	4804	4830	4865	4885
35063236600000	PANTHER ENERGY COMPANY	HARRIET	2-28	28	8N	12E	HUGHES	4975	4825			
35063236970000	YALE OIL ASSOCIATION INCORPORA	LUNA	1-22	22	7N	11E	HUGHES	5365	5090	5118	5176	5207
35063220520000	TWIN EAGLE PETROLEUM	RUPE	1	2	8N	9E	HUGHES	4370	3975	4003		4013
35063234980000	COLUMBUS OIL CO	MCGIRT	11	1	9N	8E	HUGHES	4275	3945			3980
35063222470000	BETTIS BOYLE & STOVALL	OLIPHANT	1	7	9N	9E	HUGHES	4050	3940			3972
35063215230000	CHAMA ENERGY INC	LONG	1	2	9N	8E	HUGHES	4148	4047	4078		4087
35063212590000	PREMIER RES LTD	ROGERS #1	AO54-01	14	9N	8E	HUGHES	4525	4163	4195		4206
35063227620000	AMBASSADOR OIL CORPORATION	TONI MARIE	1	4	9N	9E	HUGHES	4732	3774			3798
35063214020000	AMBASSADOR OIL CORPORATION	TONI MARIE	4	4	9N	9E	HUGHES	4248	3794			3820
35063214060000	EDDIES SUBMERSIBLE SERVICE	TONI MARIE	3	4	9N	9E	HUGHES	4302	3785			3811
35063207580000	HESTON OIL CO	MARY	7-1	7	9N	10E	HUGHES	4267	3903	3932		3938
35063218740000	FLINT J A	SALLY	1	17	8N	9E	HUGHES	4479	4067	4072		4109
35063236370000	NEWFIELD EXPLORATION MID-CONT	NUNN	2-1	1	5N	11E	HUGHES	7115	6775			6915
35063236000000	NEWFIELD EXPLORATION MID-CONT	NUNN	1-1	1	5N	11E	HUGHES	7200	6895			7050
35063237090000	GLENN SUPPLY COMPANY INCORPO	WALTER	1-9	9	6N	11E	HUGHES	6178	5782	5813	5872	5909
35063210600000	TAYLOR JOHN A	PARKS	1	1	6N	10E	HUGHES	5971	5164	5197	5263	5301
35063237500000	PONTOTOC PRODUCTION COMPANY	PARKS	5	1	6N	10E	HUGHES	5580	5181	5216	5284	5323
35063236670000	NEWFIELD EXPLORATION MID-CONT	WALKER HEIRS	3-27	27	5N	11E	HUGHES	7264	6911	6937	6999	7023
35063236850000	NEWFIELD EXPLORATION MID-CONT	POE	1-29	29	4N	11E	HUGHES	8026	7741	7767	7844	7886
35063236480000	DEVON ENERGY PRODUCTION COM	FREEPORT	2-32	32	4N	11E	HUGHES	8050	7776			7934
35063236520000	NEWFIELD EXPLORATION MID-CONT	RUSSELL LEON	2-34	34	4N	10E	HUGHES	6930	6576	6603	6697	6738
35063235820000	LATIGO PETROLEUM INCORPORATE	PATTERSON	1-36	36	6N	11E	HUGHES	7750	6793	6825	6900	6936
35063236100000	CITRUS ENERGY CORPORATION	ROBERT	1-22	22	9N	12E	HUGHES	4494	4241	4257		4292
35063215990000	GENERAL PETROLEUM INCORPORAT	BUCK	2	21	9N	10E	HUGHES	4608	3682	3703		3709

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35063211390000	DERRICK RESOURCES INCORPORAT	MATHIS	1-17	17	9N	10E	HUGHES	4110	4026			4055
35063207910000	TAYLOR PETROLEUM LIMITED LIABIL	LANSDEN	1	8	9N	10E	HUGHES	4307	3944	3970		3979
35063204450000	C BAR K ENTERPRISES INCORPORA	MORRISON 1	1	13	9N	10E	HUGHES	4048	3729			3761
35063203810000	M M & M RESOURCES INCORPORATE	MCQUEEN	1	14	9N	10E	HUGHES	4035	3724	3747		3758
35063224770000	SAMEDAN OIL CORP	NOBLE JOHN	1	4	7N	8E	HUGHES	4310	4036	4061	4112	4142
35063231790000	KEENER OIL & GAS COMPANY	FREDERICK	1	5	7N	8E	HUGHES	4140	3889	3914	3975	4021
35063216050000	TRANSCO OIL CO	JANET MARILYN	3-4	4	7N	8E	HUGHES	4405	4052			4161
35063211490000	U S DRILLING COMPANY INCORPORA	JACOBS	1	3	7N	8E	HUGHES	4305	3994			4088
35063231200000	LYNAN ENERGY INCORPORATED	MKB	1	26	8N	8E	HUGHES	4331	3870	3904		3924
35063219840000	LIBERTY OPERATING INCORPORATE	CHARLOTTE	1	25	8N	8E	HUGHES	4404	3998			4050
35063222350000	FLINT J A	LESLIE	1	35	8N	8E	HUGHES	4550	4049	4089		4106
35063226020000	WALKER KEITH F	KELLEY	1-36	36	7N	8E	HUGHES	4911	4522	4554	4638	4678
35063218170000	JORDAN OIL & GAS CO	STAFFORD	1-6	6	6N	9E	HUGHES	5679	4552	4583	4668	4718
35063216760000	DAVIS OIL CO	ROBINSON	1	25	7N	9E	HUGHES	6050	5633	5664	5734	5779
35063215960000	WAGNER & BROWN	SNIDER	1	18	4N	11E	HUGHES	8776	7638	7673	7747	7802
35063212720000	AMERCN PETRO MINER	CHAPMAN	35-1	35	8N	9E	HUGHES	4842	4419	4458		4475
35063235950000	NEWFIELD EXPLORATION MID-CONT	REYNOLDS	1-11	11	5N	11E	HUGHES	7354	7037	7077	7142	7196
35063215420000	T K DRILLING CORPORATION	IVORY ANN	1-20	20	8N	10E	HUGHES	4277	3790	3812	3845	3853
35063231430000	G R B RESOURCES INCORPORATED	STRINGFELLOW	1	6	7N	10E	HUGHES	5215	4763	4780		4815
35063235280001	YALE OIL ASSOC INC	MARBET	40R	15	8N	12E	HUGHES	4933	4769			4831
35063302650001	CUESTA PETRO INC	LUCAS	1	3	8N	12E	HUGHES	4765	4609	4626	4659	4666
35063237600000	CONTINENTAL RESOURCES INCORP	WILSON B	14-12	14	4N	10E	HUGHES	9543	7450	7478	7554	
35063237830000	PONTOTOC PRODUCTION COMPANY	SMART	1-35	35	8N	11E	HUGHES	4900	4589	4612	4656	4674
35077206800000	WARD PETROLEUM CORPORATION	HOPE	1-4	4	3N	20E	LATIMER	21960	20804	20839	20905	20945
35077214730000	BP AMERICA PRODUCTION COMPAN	ORT MICKLE	1	20	6N	18E	LATIMER	12637	12154	12184	12224	12231
35077201640000	RASMUSSEN HAL J OPERATING INC	CATHEY	1-3	3	5N	20E	LATIMER	14343	14163	14199	14261	14299
35077215110000	BP AMERICA PRODUCTION COMPAN	SIMON	3	27	6N	20E	LATIMER	15687	15116	15154	15203	15240
35077205130000	CHK	CINDY	#1-21	21	5N	20E	LATIMER	18730	16680			16829
35077201720000	CHESAPEAKE OPERATING INCORPO	RUDY	#1-27	27	7N	21E	LATIMER	13600	13254	13293	13366	13394
35077214530000	BP AMERICA PRODUCTION COMPAN	ANDERSON	7	5	6N	22E	LATIMER	13440	12998	13026	13085	13121
35077214780000	BP AMERICA PRODUCTION COMPAN	HARMON MCFERR	7	34	7N	22E	LATIMER	12848	12389	12418	12480	12516
35077214690000	BP AMERICA PRODUCTION COMPAN	MABRY	7	13	6N	22E	LATIMER	13924	13238	13265	13332	13374
35077214640000	BP AMERICA PRODUCTION COMPAN	USA JACQUELINE	2-1	1	5N	18E	LATIMER	13872	13369	13394	13451	13478
35077215280000	QUESTAR EXPLORATION & PRODUC	FAZEKAS	1-33	33	6N	18E	LATIMER	13359	12777	12803	12844	12860
35077214220000	BP AMERICA PRODUCTION COMPAN	HAMPTON BUD	4	18	5N	18E	LATIMER	13350	12903			13000
35077213140000	BP AMERICA PRODUCTION COMPAN	SMITH	7	20	5N	18E	LATIMER	12675	12172			12266
35077208000000	VASTAR	CAUDRON	4	26	5N	17E	LATIMER	14400	14339			
35077204760000	BP AMERICA PRODUCTION COMPAN	PASCHALL	2	21	5N	18E	LATIMER	14278	12153	12188	12226	12255
35077204610000	BP AMERICA PRODUCTION COMPAN	COSTILOW	3	14	5N	18E	LATIMER	14200	12023	12058	12137	12169
35077204320000	BP AMERICA PRODUCTION COMPAN	FAZEKAS STEVE	2	17	5N	18E	LATIMER	15012	11949	11978	12023	12050
35077203730000	CHESAPEAKE OPERATING INCORPO	WILLIAMS `A`	2-23	23	5N	18E	LATIMER	12554	12456			
35077203380000	ARCO	BENNETT JESSIE	2	30	5N	18E	LATIMER	11188	13060	13090	13137	13157
35077203360000	BP AMERICA PRODUCTION COMPAN	SMITH UNIT MA	2	20	5N	18E	LATIMER	12613	12272	12310	12361	12389
35077205840000	BP AMERICA PRODUCTION COMPAN	ENIS E V	2	27	5N	18E	LATIMER	14100	12855	12886	12944	12978
35077205310000	BP AMERICA PRODUCTION COMPAN	DOBBS STATE UNI	2	29	5N	18E	LATIMER	14200	12547	12569	12612	12642
35077205080000	BP AMERICA PRODUCTION COMPAN	STATE `C`	2	28	5N	18E	LATIMER	14100	12685	12716	12759	12794
35077205050000	BP AMERICA PRODUCTION COMPAN	SMITH	3	20	5N	18E	LATIMER	14200	12303	12334	12386	12413
35077204950000	BP AMERICA PRODUCTION COMPAN	MCALESTER R F	3	22	5N	18E	LATIMER	14400	12470	12501	12547	12574
35077204940000	BP AMERICA PRODUCTION COMPAN	AUSTIN WAYNE	2	13	5N	18E	LATIMER	14350	12210			12331
35077204880000	CHESAPEAKE OPERATING INCORPO	WILLIAMS `A`	3-23	23	5N	18E	LATIMER	14990	12416			12527
35077202850000	EXXONMOBIL	RETHERFORD	1	5	3N	18E	LATIMER	19046	17468	17508	17576	17600
35077204870000	ARCO	SHARP	1	2	5N	17E	LATIMER	15508	12935	12965	13006	13027

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35077215800000	UNIT PETROLEUM CO	Ridge	1	10	5N	21E	LATIMER	15165	14578			14726
35079203750000	QUESTAR EXPLORATION & PRODUC	CALHOUN	1	2	7N	24E	LE FLORE	13475	12455			12606
35079206950000	ARKLA	BURTON	1-21	21	8N	26E	LE FLORE	12845	9364			9505
35079201480000	FERGUSON OIL COMPANY	KANNADY	1	26	9N	26E	LE FLORE	7988	7703			7790
35079207900000	STEPHENS PROD	RICHISON JOE	2	7	9N	27E	LE FLORE	7276	6994			7085
35079207800000	STEPHENS PRODUCTION COMPANY	REED ROY	2	28	9N	26E	LE FLORE	8200	7796			7876
35079210710000	SEDNA ENERGY INCORPORATED	REBECCA	1	23	9N	26E	LE FLORE	7900	7809			
35079210440000	HANNA OIL & GAS COMPANY	SEBO	1	33	9N	26E	LE FLORE	8129	7908			8021
35079300510000	ESCO EXPLORATION INCORPORATE	PETTIGREW	1	16	9N	26E	LE FLORE	8275	8143			8207
35079207630000	PANTERA ENERGY	TIBBITTS	7-1	7	9N	26E	LE FLORE	8350	8210			8256
35079205350000	SLAWSON DONALD C	NICHOLS	1-23	23	9N	26E	LE FLORE	7719	7531			7600
35079203560000	O G P OPERATING INCORPORATED	BRANSON	1	34	9N	26E	LE FLORE	7923	7793			7884
35079202920000	SENECA OIL	TOJAC	1	34	9N	26E	LE FLORE	7978	7837			7928
35079202830000	HANNA OIL & GAS COMPANY	ELLEN CHRISTIAN	1	33	9N	26E	LE FLORE	8025	7826			7915
35079206560000	ARCO	RUNESTONE	1	9	6N	25E	LE FLORE	17173	14073	14102	14185	14242
35079200250000	PAN AMERICAN	HEER UNIT	2	32	8N	23E	LE FLORE	6603	6412			6543
35079201530000	HAMON JAKE L	EVALENE HICKMAN	1	8	8N	25E	LE FLORE	9976	9675			9799
35079206110000	STEPHENS PROD	BLEDSOE HARLEY	2	9	8N	23E	LE FLORE	6430	6254	6291		6355
35079205670000	TXO	YOUNG `V`	1	14	9N	24E	LE FLORE	6056	5605			5670
35079205390000	MUSTANG FUEL CORPORATION	TURMAN `B`	1	9	9N	25E	LE FLORE	6236	6119			6169
35079205290000	DYNE EXPLORATION COMPANY	SULLINS	1-30	30	9N	25E	LE FLORE	6803	6669			6748
35079204350000	HADSON PET USA INC	BLAYLOCK /B/	1-34	34	10N	24E	LE FLORE	6520	6398			6450
35079208650000	HANNA O&G CO	GAMBLE	2	31	10N	25E	LE FLORE	6272	6102			6149
35079207910000	MUSTANG FUEL CORP	WEGERT	1-2	2	8N	24E	LE FLORE	5826	5703			5786
35079207600000	PSEC INCORPORATED	BLACK	1-35	35	9N	24E	LE FLORE	7041	5554			5663
35079206920000	BP AMERICA PRODUCTION COMPAN	COWAN	1	36	10N	24E	LE FLORE	6245	6053			6103
35079206280000	STEPHENS PRDCTN CO	MCBEE GRAHAM	4	12	8N	23E	LE FLORE	6340	6176	6206		6261
35079300030000	QUESTAR EXPLORATION & PRODUC	A W GIST	1	32	10N	26E	LE FLORE	8101	7900			7946
35079210790000	STEPHENS PROD	TURMAN WOODRO	4	2	9N	25E	LE FLORE	7989	7796	7829		7850
35079209980000	PETROLEUM DEVELOPMENT COMPA	REDBANK CREEK	1	3	8N	24E	LE FLORE	5787	5740			
35079209440000	XTO ENERGY INCORPORATED	LIZZABELL	2	3	8N	23E	LE FLORE	6248	6125	6157		6208
35079209290000	STEPHENS PRODUCTION COMPANY	CARPENTER H J	3	29	9N	24E	LE FLORE	5820	5726			5803
35079203740000	WHITMAR EXPLORATION	GAMBLE	1	19	10N	25E	LE FLORE	7260	6595			6630
35079202080000	DANIEL RESOURCE DEVELOPMENT	VIRGINIA COWAN	1	31	10N	25E	LE FLORE	6175	6053			6103
35079212190000	STEPHENS PROD	WELLS WADE	3-19	19	9N	24E	LE FLORE	6547	6207			6271
35079211910000	STEPHENS PRODUCTION COMPANY	FALCONER	2-7	7	9N	24E	LE FLORE	6285	6192			
35079211780000	WYTEX PRODUCTION CORPORATION	CORLEY	1-8	8	9N	24E	LE FLORE	6640	6528			6584
35079212910000	STEPHENS PROD	MCBEE G C	3	29	9N	24E	LE FLORE	6067	5702			5779
35079214510000	PETROHAWK OPERATING COMPANY	CALMA	1-30	30	10N	24E	LE FLORE	7089	6799			6845
35079211260000	STEPHENS PRODUCTION COMPANY	U S A	2	21	8N	23E	LE FLORE	6100	6055			
35079204820000	XTO ENERGY INCORPORATED	WHITEHEAD	1	22	9N	25E	LE FLORE	7536	7388			
35079209050000	STEPHENS PRODUCTION COMPANY	WALLEN HEIRS	2	4	8N	23E	LE FLORE	6200	5905			5981
35079203950000	UNIT PETROLEUM COMPANY	GAMBLE RACHEL	1	35	10N	24E	LE FLORE	6607	6253			6303
35079215640000	CHK	HAMM	#1-7	7	8N	23E	LE FLORE	6750	6372	6407		6448
35079600200000	LE FLORE G&E	L E KENNEDY	1	18	8N	23E	LE FLORE	7275	6412			6511
35079300570000	ORYX	B E COBB	1UT	17	10N	27E	LE FLORE	6975	6752			6795
35079200060000	ORYX	ARKANSAS VALLEY	1A	21	10N	27E	LE FLORE	7233	6816			6861
35079600020000	MIDWEST OIL PROD	ROBBS	1	26	7N	26E	LE FLORE	13440	13005			13239
35079212820000	BP AMERICA PRODUCTION COMPAN	FORD UNIT	7	32	7N	23E	LE FLORE	12912	12449	12472	12530	12578
35079213090000	BP AMERICA PRODUCTION COMPAN	GOLDSBOROUGH	6A	31	7N	23E	LE FLORE	12850	12386	12415	12471	12519
35079206120000	TERRA RES	ROSS Z	1-8	8	7N	23E	LE FLORE	12811	12402			12529
35079205570000	BP AMERICA PRODUCTION COMPAN	REED ROY	2	4	6N	23E	LE FLORE	13828	12210	12237	12303	12349

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35079216910000	SEDNA ENERGY INCORPORATED	CASEY	1-1	1	8N	26E	LE FLORE	8800	8335			8433
35079205360000	JACO ENERGY COMPANY INCORPOR	TIBBITS	1	14	9N	25E	LE FLORE	7909	7730			
35079201990000	JACO ENERGY COMPANY INCORPOR	COLEMAN	1-5	5	8N	26E	LE FLORE	8841	8480			8628
35079213270000	CHESAPEAKE OPERATING INCORPO	GLENN	#3-25	25	9N	25E	LE FLORE	9106	8792			8902
35079216520000	CREST RESOURCES INCORPORATED	WILSON	1-2	2	8N	25E	LE FLORE	9235	9016			
35079216040000	CREST RESOURCES INCORPORATED	BROWN BOB	1-3	3	8N	25E	LE FLORE	9614	9059			9163
35079600690000	SUN	HELEN V MURRAY	1	29	10N	27E	LE FLORE	7263	7018			7063
35079600170000	STEPHENS PRODUCTION COMPANY	BLEDSOE HARLEY	1	9	8N	23E	LE FLORE	7116	6039			6140
35079301920000	MORRIS DENNIS J	FLOYD MORRIS	1	12	8N	26E	LE FLORE	9260	8468			8571
35079300390000	PAN AMERICAN	MAXWELL UNIT C	1	26	10N	24E	LE FLORE	6900	6608			6663
35079201050000	STEPHENS PRODUCTION COMPANY	KELLY /C/	1	12	8N	25E	LE FLORE	9816	8714			8810
35079300310000	PAN AMERICAN	HOLMES UNIT	1	7	8N	24E	LE FLORE	7350	5801			5894
35079207370000	AMOCO	DEVIL`S BACKBON	1	31	5N	24E	LE FLORE	21019	17851	17872	17925	17958
35079207240000	EXXONMOBIL	GREEN BAY PACKA	1	8	4N	23E	LE FLORE	21935	18637	18665	18725	18762
35091208080000	TXO	FISHER RANCH	1	22	9N	14E	MC INTOSH	5400	5240			5258
35091211350000	HOLKE DAVE	FISHER	1-9	9	9N	14E	MC INTOSH	4691	4314			4339
35091205390000	DERRICK RESOURCES INCORPORAT	FISHER	1-16	16	9N	14E	MC INTOSH	4751	4540			4560
35091205650000	OXY USA INC	HAMMETT A	1	28	10N	17E	MC INTOSH	4692	4362			4392
35091204210000	GRACE PETRO	POWELL	1-32	32	10N	16E	MC INTOSH	4450	4267			4283
35091201990000	CHEYENNE PET CO	RULE	1-12	12	9N	14E	MC INTOSH	5050	4943			4971
35091213210000	MAHALO ENERGY USA INCORPORAT	WRIGHT	1-10	10	9N	15E	MC INTOSH	5040	4752			4770
35091210440000	XAE CORP	FARROW	1-16	16	9N	15E	MC INTOSH	4982	4794			4819
35091209050000	CHESAPEAKE OPERATING INCORPO	KIMBERLING	2	19	9N	15E	MC INTOSH	5100	4822			4841
35091208330000	ENERFIN RESOURCES I LIMITED PAR	CARPENTER	1	24	9N	14E	MC INTOSH	5800	4987			5005
35091207750000	HUTTON GAS CO	FISHER MARTIN	1-8	8	9N	15E	MC INTOSH	5200	5081			5110
35091206010000	SK RES	FISHER	1	7	9N	15E	MC INTOSH	5005	4905			4925
35091205730000	ENERFIN RESOURCES I LIMITED PAR	EWENS	1	4	9N	15E	MC INTOSH	4850	4635			4653
35091204360000	WENEXCO INC	FISHER	1-15	15	9N	14E	MC INTOSH	5425	5249			5270
35091204230000	LATENT LIMTED	VIVIAN	1	16	9N	15E	MC INTOSH	4900	4865			4885
35091204160000	HCG ENERGY CORPORATION	GOODSELL	1-3	3	9N	15E	MC INTOSH	4870	4611			4638
35091203180000	TXO	LAWSON	1	7	9N	15E	MC INTOSH	5110	4954			4982
35091201110000	COQUINA	CHENAULT	1	15	9N	15E	MC INTOSH	4972	4766			4781
35091209720000	RAMSEY PROPERTY MANAGEMENT I	WEST OVERLOOK	21-1	21	10N	14E	MC INTOSH	4363	4008	4021		4035
35091211660000	XAE CORPORATION	A J	1	4	8N	14E	MC INTOSH	5150	4794	4813		4825
35091209360000	DYNE EXPLORATION COMPANY	T-BAR RANCH	1-17	17	10N	15E	MC INTOSH	4020	3895			3924
35091211030000	DYNE EXPLORATION COMPANY	T-BAR RANCH	2-19	19	10N	15E	MC INTOSH	4610	4286			4313
35091210350000	ALDA O&G	HOPKINS CHARLO	1	5	9N	16E	MC INTOSH	4370	4352			4370
35091205430000	G M OIL PROPERTIES INCORPORATE	URQUHART A	1-A	29	10N	17E	MC INTOSH	4530	4332			4360
35091213650000	WEST BAY EXPL ETAL	DUKE	1-13	13	9N	15E	MC INTOSH	5625	5408			5424
35091211810000	HOLKE DAVE	PRICE	1-5	5	9N	16E	MC INTOSH	4570	4197			4214
35091204190000	GRACE PETRO	RIPPY	1-35	35	10N	15E	MC INTOSH	4452	4281			4301
35091210680000	XAE CORP	PARKER BROTHER	1-2	2	10N	14E	MC INTOSH	4300	4035	4055		4070
35091214860000	KEPCO OPERATING INC	MODENE	1	20	9N	16E	MC INTOSH	5840	5692			5709
35091201200000	LUBELL OIL CO	WELLS	2-4	4	8N	13E	MC INTOSH	6100	4774			4831
35091201950000	CLEARY PETRO	SIMPSON	1-25	25	11N	18E	MC INTOSH	2407	2269			2296
35091205850000	DYNE EXPLORATION COMPANY	VAN ARSDALE	1	18	10N	13E	MC INTOSH	4000	3817	3836		3855
35091205900000	FORTUNA ENERGY CORP	QUINCY	1-25	25	9N	13E	MC INTOSH	4680	4356	4375		4385
35091207660000	BRAND OIL & GAS INCORPORATED	CARTER	1	19	10N	13E	MC INTOSH	4204	3988	4008		4026
35091210180000	MAHALO ENERGY USA INCORPORAT	ETHEL	1	24	9N	13E	MC INTOSH	4610	4296			4320
35091211320000	GLB EXPLORATION INCORPORATED	JANEWAY	1	14	9N	13E	MC INTOSH	4420	4034			4060
35091212070000	GLB EXPLORATION INC	SMILING FARM	1	11	9N	13E	MC INTOSH	4375	4099			4124
35091213950000	CHESAPEAKE OPERATING INCORPO	RANCH	#2-20	20	11N	15E	MC INTOSH	3440	3289			3326

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35091214170000	CITRUS ENERGY CORPORATION	CAMPBELL	1-7	7	9N	13E	MC INTOSH	4375	4213	4226		4256
35091214400000	YALE OIL ASSOCIATION INCORPORA	RUTH ANN	1-36	36	10N	13E	MC INTOSH	4282	4012	4024		4038
35091214650000	NOBLE ENERGY PRODUCTION INCOI	BLACKBIRD	10	16	11N	14E	MC INTOSH	3315	3134			3170
35091215340000	PANTHER ENERGY INCORPORATED	LIZZY	1-1	1	8N	13E	MC INTOSH	5131	4776	4791	4818	4824
35101227000000	SANFORD DEAN	TRUE VINE - TYLER	1	2	9N	19E	MUSKOGEE	4235	4070			4110
35101228100000	MARBET LLC	MARBET LLC	49	28	10N	20E	MUSKOGEE	3275	3084			3111
35101226970000	WHEELER ENERGY CO	KETCHUM	1-27	27	10N	19E	MUSKOGEE	4200	3932			3957
35101201590000	KISKA OIL CORP	BILL KNAPP	1	20	12N	19E	MUSKOGEE	3102	2597			2620
35101203560000	CLEARY PETRO	FULTON	1-35	35	13N	18E	MUSKOGEE	2260	2148			2182
35101227140000	EGRET OPERATING CO	MUSKOGEE	1-6	6	13N	19E	MUSKOGEE	2340	1926			1960
35107232490000	RED FORK PROD LLC	HUNN	34-1	34	10N	11E	OKFUSKEE	3903	3736	3756		3775
35107232450000	METRO ENERGY GROUP INCORPOR/	HUDSON	1-16	16	10N	12E	OKFUSKEE	3950	3797	3815		3840
35107232440000	METRO ENERGY GROUP INCORPOR/	LONGVIEW	2-17	17	10N	12E	OKFUSKEE	3950	3849	3866		3893
35107232400000	METRO ENERGY GROUP INCORPOR/	LONGVIEW	1-17	17	10N	12E	OKFUSKEE	3950	3711	3729		3757
35107232390000	METRO ENERGY GROUP INCORPOR/	SNELL HEIRS	4-18	18	10N	12E	OKFUSKEE	3905	3706	3727		3748
35107232500000	RED FORK PROD LLC	KING	23-1	23	10N	11E	OKFUSKEE	4106	3917	3936		3961
35121211310000	SAMSON RESOURCES COMPANY	PEARL	1-A	32	4N	14E	PITTSBURG	12840	11697	11728	11795	11835
35121225580000	DEVON ENERGY PRODUCTION COMI	MULLENS	3-29	29	4N	14E	PITTSBURG	13200	11314	11339	11396	11433
35121226320000	CHESAPEAKE OPERATING INCORPO	MOUNTAIN	#1-2	2	7N	17E	PITTSBURG	9013	7951	7991		8016
35121226150000	CHESAPEAKE OPERATING INCORPO	COYOTE	#6-26	26	8N	16E	PITTSBURG	7803	6762	6780		6805
35121225800000	CHESAPEAKE OPERATING INCORPO	BROWNE	#5-36	36	8N	17E	PITTSBURG	9088	7666	7696		7728
35121200630000	PETROQUEST ENERGY LIMITED LIAE	BOWLBY	1	3	8N	16E	PITTSBURG	6351	6225	6239		6250
35121210730000	FAGADAU ENERGY CORPORATION	SEARCY	2	35	9N	16E	PITTSBURG	6366	6194			6212
35121208210000	TEXAS O&G CORP	QUINTON /A/	1	22	7N	18E	PITTSBURG	8700	8128	8168		8203
35121204850000	CHESAPEAKE OPERATING INCORPO	DEBORAH HUGHES	1	13	7N	17E	PITTSBURG	8263	7876	7921		7945
35121203530000	ST MARY LAND & EXPLORATION CO	BROWNE	1-9	9	7N	17E	PITTSBURG	8220	8018			8078
35121215340000	PARK AVE EXPL CORP	COCHRAN	1-30	30	7N	17E	PITTSBURG	10650	8479	8519		8549
35121207690000	CHESAPEAKE OPERATING INCORPO	H D S CORP	#1-24	24	8N	16E	PITTSBURG	6766	6638	6661		6684
35121207840000	POTTS-STEPHENSON EXP	SCHNEIDER	1-23	23	8N	16E	PITTSBURG	7306	7151			7192
35121205750000	DEVON ENERGY PRODUCTION COMI	GEORGE TRUST	1-36	36	8N	16E	PITTSBURG	7278	7157	7182		7208
35121207890000	MUSTANG	MCLEAN	2-30	30	5N	16E	PITTSBURG	14124	13619			13743
35121200960000	STEPHENS PROD	W ERLE WHITE	1	26	7N	17E	PITTSBURG	8350	8072	8109		8135
35121200600000	ARKANSAS LOUISIANA GAS COMPAI	WHITE `Q`	1	25	7N	17E	PITTSBURG	8543	8031			8116
35121216110000	ARCO	LAKE EUFAULA	1	2	6N	16E	PITTSBURG	12095	9856	9883	9909	9921
35121211550000	XTO ENERGY INCORPORATED	WHITE `AD`	1	24	8N	18E	PITTSBURG	7713	7275	7315		7344
35121207350000	TAG TEAM RESOURCES LLC	MITCHELL	1-8	8	5N	14E	PITTSBURG	9900	8938	8966	9031	9067
35121234100000	NEWFIELD EXPLORATION MID-CONT	WATKINS	2-6	6	5N	14E	PITTSBURG	9215	8935	8960	9006	9041
35121233300000	NEWFIELD EXPLORATION MID-CONT	WATKINS	1-6	6	5N	14E	PITTSBURG	8930	8642	8671	8706	8728
35121211690000	JACO ENERGY COMPANY INCORPOR	METHODIST-EPISC	1-2	2	8N	16E	PITTSBURG	6498	6319	6336		6344
35121209200000	FAGADAU ENERGY CORPORATION	URQUHART	1-36	36	9N	16E	PITTSBURG	7103	6165			6187
35121234150000	NEWFIELD EXPLORATION MID-CONT	WATKINS	3-6	6	5N	14E	PITTSBURG	8858	8593			
35121232230000	NEWFIELD EXPLORATION MID-CONT	ANDREW	1-19	19	5N	14E	PITTSBURG	10286	9975	10003	10056	10085
35121234790000	NEWFIELD EXPLORATION MID-CONT	GRANTHAM	2-31	31	6N	14E	PITTSBURG	9062	8569	8602	8657	8687
35121231760000	NEWFIELD EXPLORATION MID-CONT	GRANTHAM	1-31	31	6N	14E	PITTSBURG	9225	8920	8949	9007	9043
35121230220000	NEWFIELD EXPLORATION MID-CONT	SHERRILL	2-30	30	5N	14E	PITTSBURG	10658	10316	10340	10400	10434
35121300430000	CHEVRON TEXACO	MURDAUGH	1	27	7N	18E	PITTSBURG	11500	11199	11243		11279
35121233240000	CHESAPEAKE OPERATING INCORPO	LONDON	#1-31	31	7N	14E	PITTSBURG	6716	6499	6522	6565	6581
35121210870000	OXLEY PETROLEUM COMPANY	ROUSE	1	23	6N	15E	PITTSBURG	10402	9935	9964	10008	10029
35121205880000	QUESTAR EXPLORATION & PRODUC	JANEWAY A	1	36	9N	17E	PITTSBURG	6116	5887	5911		5930
35121200510000	TENNECO	DAVIS TRAVIS	1	32	8N	14E	PITTSBURG	6079	5541	5571	5601	5614
35121203580000	SIEGFRIED R H INC	BERNHARDT	1	20	7N	14E	PITTSBURG	6770	6483	6497	6517	6527
35121000270000	GOSE STEVE	BROWNE	1	28	7N	16E	PITTSBURG	8624	8189			8255

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35121216160001	MIDWEST ENERGY CORP	DOUGLAS	1-13	13	5N	15E	PITTSBURG	13542	11629	11661	11732	11756
35121000230000	EXXONMOBIL	FRED MANSCHRIC	1	28	6N	17E	PITTSBURG	12915	11412			11500
35121227190000	BP	BOWMAN	7	20	5N	17E	PITTSBURG	14153	13666	13681	13740	13765
35121234270000	BP AMERICA PRODUCTION COMPAN	RICHARDS EDITH	5	30	5N	17E	PITTSBURG	13774	13204	13240	13287	13313
35121214870000	BP AMERICA PRODUCTION COMPAN	P BOWMAN	4	20	5N	17E	PITTSBURG	16300	13301			
35121202660000	LONG & ATTEBERRY INC	BROWN	1-4	4	7N	16E	PITTSBURG	8237	7572	7599	7624	7628
35121000400000	EXXONMOBIL	LIDA TATE	1	15	8N	15E	PITTSBURG	6146	6044			
35121000190000	ALDEN AURORA	LYTLE	1	12	7N	14E	PITTSBURG	8169	7281			7343
35121000110000	SAMSON RESOURCES COMPANY	MULLINS	1	29	4N	14E	PITTSBURG	7058	11294			11411
35121600780000	WILSHIRE OIL OF TX	BROWNE	1	21	7N	16E	PITTSBURG	9150	8193	8226		8255
35121201940000	CHESAPEAKE OPERATING INCORPO	PRESSON /C/	1	6	8N	16E	PITTSBURG	5528	5429	5443		5450
35121202030000	PETROQUEST ENERGY LIMITED LIAB	SMITH	1	5	8N	16E	PITTSBURG	5426	5213	5227		5234
35121230520000	NEWFIELD EXPLORATION MID-CONT	VAN PELT	1-7	7	6N	13E	PITTSBURG	6876	6609	6631	6687	6715
35121234320000	NEWFIELD EXPLORATION MID-CONT	MABRAY B & D	1-22	22	4N	12E	PITTSBURG	9775	9222	9258	9336	9378
35121222520000	CHESAPEAKE OPERATING INCORPO	FISHBURN	1	27	3N	12E	PITTSBURG	10200	10052	10090		
35121230210000	EOG RES INC	BLIZZARD	12-1	12	6N	12E	PITTSBURG	7100	6823	6840	6890	6915
35121231360000	NEWFIELD EXPLORATION MID-CONT	NEWMAN	1-23	23	6N	12E	PITTSBURG	7732	7435			7552
35121231160000	NEWFIELD EXPLORATION MID-CONT	BLEVINS TRUST	1-19	19	6N	12E	PITTSBURG	7210	6910	6939	7017	7048
35121231670000	NEWFIELD EXPLORATION MID-CONT	HESKETT	1-25	25	6N	12E	PITTSBURG	8174	8047			8144
35121232260000	NEWFIELD EXPLORATION MID-CONT	LOFTIS	1-6	6	4N	12E	PITTSBURG	8714	8451	8476	8547	8596
35121234910000	XTO ENERGY INCORPORATED	ROGERS	2-30	30	5N	12E	PITTSBURG	8146	7659	7686	7749	7792
35121229940000	NEWFIELD EXPLORATION MID-CONT	BARNETT	1-19	19	5N	13E	PITTSBURG	8680	8439	8467	8542	8575
35121231680000	NEWFIELD EXPLORATION MID-CONT	DAGGS	1-35	35	6N	12E	PITTSBURG	7815	7491			7638
35121228610000	NEWFIELD EXPLORATION MID-CONT	LOFTIS A E	2-15	15	5N	12E	PITTSBURG	7000	7512	7540	7614	7658
35121231240000	NEWFIELD EXPLORATION MID-CONT	JOHNSTON	1-24	24	5N	13E	PITTSBURG	9585	9316	9342	9395	9420
35121230840000	NEWFIELD EXPLORATION MID-CONT	JOHNSON	1-36	36	6N	12E	PITTSBURG	8231	7610			7734
35121230280000	NEWFIELD EXPLORATION MID-CONT	ADAM	1-16	16	5N	12E	PITTSBURG	8258	7586	7622	7706	7745
35121230100000	NEWFIELD EXPLORATION MID-CONT	LAMBERT	1-10	10	5N	12E	PITTSBURG	9010	7524			7660
35121229980000	NEWFIELD EXPLORATION MID-CONT	ELLIS	1-23	23	5N	12E	PITTSBURG	8464	8151	8176	8231	8262
35121229240000	NEWFIELD EXPLORATION MID-CONT	LOFTIS A E	3-15	15	5N	12E	PITTSBURG	8050	7768	7792	7851	7887
35121230720000	NEWFIELD EXPLORATION MID-CONT	SANDRA	1-12	12	5N	13E	PITTSBURG	9060	8752	8777	8835	8871
35121230510000	NEWFIELD EXPLORATION MID-CONT	GRANT	1-10	10	5N	13E	PITTSBURG	9170	8878	8903	8969	9007
35121230310000	NEWFIELD EXPLORATION MID-CONT	GRANT	1-6	6	5N	12E	PITTSBURG	7580	7008			7169
35121228370000	XTO ENERGY INCORPORATED	BLACK	1-21	21	5N	12E	PITTSBURG	9215	7555			7695
35121232080000	NEWFIELD EXPLORATION MID-CONT	ADAM	2-16	16	5N	12E	PITTSBURG	7995	7634			7794
35121232220000	NEWFIELD EXPLORATION MID-CONT	LAMBERT	2-10	10	5N	12E	PITTSBURG	7698	7436	7458	7510	7534
35121233020000	NEWFIELD EXPLORATION MID-CONT	JOHNSON	2-36	36	6N	12E	PITTSBURG	7864	7607	7631	7682	7705
35121232450000	NEWFIELD EXPLORATION MID-CONT	ROBBIE G	1-34	34	5N	12E	PITTSBURG	8800	8435	8464	8539	8584
35121234070000	NEWFIELD EXPLORATION MID-CONT	SANDRA	3-12	12	5N	13E	PITTSBURG	9090	8751	8779	8843	8875
35121233490000	CHESAPEAKE OPERATING INCORPO	BURLESON	#1-1	1	5N	12E	PITTSBURG	7960	7611			7717
35121231850000	NEWFIELD EXPLORATION MID-CONT	MCCLENDON	2-26	26	6N	12E	PITTSBURG	8188	7900			8018
35121232840000	NEWFIELD EXPLORATION MID-CONT	ELLIS SHERMAN	3-22	22	5N	12E	PITTSBURG	8385	8023	8051	8114	8160
35121232150000	NEWFIELD EXPLORATION MID-CONT	CLEMONS	1-20	20	5N	13E	PITTSBURG	8947	8621	8645	8707	8741
35121211230000	XTO ENERGY INCORPORATED	BLACK VERNON J	1	28	5N	12E	PITTSBURG	9017	7835	7870	7958	8002
35121207310000	DEVON ENERGY PRODUCTION COM	BLUE CREEK	1-8	8	2N	14E	PITTSBURG	15000	12609	12647	12711	12762
35121208820000	DEVON ENERGY PRODUCTION COM	BLUE CREEK	1-7	7	2N	14E	PITTSBURG	13608	12565	12611	12683	12738
35121232430000	NEWFIELD EXPLORATION MID-CONT	STARK	2-4	4	5N	13E	PITTSBURG	9041	8736	8761	8824	8867
35121230760000	NEWFIELD EXPLORATION MID-CONT	JOHN	1-32	32	7N	13E	PITTSBURG	6430	6185	6208	6259	
35121230860000	NEWFIELD EXPLORATION MID-CONT	MYERS MOLLIE	1-19	19	7N	13E	PITTSBURG	5796	5579	5607	5657	5683
35121203510000	XTO ENERGY INCORPORATED	MCKAY	1-1	1	6N	13E	PITTSBURG	7711	6541			6622
35121207580000	STRUTHERS O&G CORP	RICHISON	1	36	7N	12E	PITTSBURG	5715	5576			5661
35121200540000	TRIDON OIL CO	J L TUCKER	1	25	8N	13E	PITTSBURG	5665	5065	5089	5122	5137

API No.	Operator	Well Name	Well No.	Sec	TWN	RGE	County	WELL TD	Wdfd Top	Wdfd Middle	Wdfd Lower	Wdfd Base
35121235930000	NEWFIELD EXPLORATION MID-CONT	JOHNSTON	3-24	24	5N	13E	PITTSBURG	9695	9253	9284	9338	9372
35121235960000	NEWFIELD EXPLORATION MID-CONT	CUNNINGHAM	1-31	31	4N	12E	PITTSBURG	9032	8525	8561	8666	8721
35121233660001	XTO ENERGY INCORPORATED	HALL	3-29	29	5N	12E	PITTSBURG	8254	7787			7866
35121236640000	CHESAPEAKE OPERATING INCORPO	HARLOW	1-30	30	4N	12E	PITTSBURG	8000	8488	8518	8604	8657
35121236270000	NEWFIELD EXPLORATION MID-CONT	CRAWFORD TRUST	3-19	19	6N	14E	PITTSBURG	8822	8348	8377	8426	8453
35121237630000	NEWFIELD EXPLORATION MID-CONT	SANDRA	5-12	12	5N	13E	PITTSBURG	9300	8842	8868	8934	8968
35123233920000	QUESTAR EXPLORATION & PRODUC	LACKEY	2-3	3	1N	7E	PONTOTOC	5978	3659			3799
35123300250000	CONOCO INCORPORATED	HOUSE	3	12	1N	7E	PONTOTOC	8978	3456			3539
35123229450000	ARROW ENERGY INCORPORATED	DIAMOND	2	35	2N	7E	PONTOTOC	4399	3938			4081
35123223270000	QUESTAR ENERGY TRADING COMPA	JHVU	4-4	3	1N	7E	PONTOTOC	4510	3618			3760
35123217120000	ARROW ENERGY INCORPORATED	WOOLEY	1	33	2N	7E	PONTOTOC	5054	4403			4510
35135201990000	GEYER BROS EQUIPMENT COMPANY	DAILY	1-9	9	10N	25E	SEQUOYAH	7430	7181			7213
35135202270000	HANNA OIL & GAS COMPANY	BRANT	1	17	10N	25E	SEQUOYAH	6768	6607			6640
35135202450000	ENRON O&G CO	BRANT	81	8	10N	25E	SEQUOYAH	7200	6918			6949
35135300050000	DEKA EXPLORATION INCORPORATE	REINHART M J	1	10	10N	26E	SEQUOYAH	7357	6340			6373
35135202960000	HANNA O&G CO	MALLARD HOLE	1	25	10N	25E	SEQUOYAH	7000	6879			6919
35135202810000	STEPHENS PROD	REDLAND RANCH	12	27	10N	25E	SEQUOYAH	6529	6087			6127
35135202600000	STEPHENS PRODUCTION COMPANY	RUSSELL CHARLEY	2	24	10N	25E	SEQUOYAH	6104	6021			6059
35135200720000	TXO	ROBERTS /C/	1	5	10N	26E	SEQUOYAH	6983	6877			6905
35135201060000	ARCO	JESSE B FARGO U	1	3	10N	24E	SEQUOYAH	4940	4576	4599		4610
351352001700	BP	MIRIAM ROGERS U	1	32	11N	27E	SEQUOYAH	6000	5689			5724
351352033100	TIDEMARK EXPL INC	STIMSON	1-33	33	11N	25E	SEQUOYAH	4144	3439			3471
35135201650000	SONAT	OPIE-CATES	1	33	11N	27E	SEQUOYAH	5670	5569			5601
35135201110000	EARLSBORO O&G CO INC	FEDERAL	1-23	23	11N	23E	SEQUOYAH	4623	4502			4520
35135201230000	SUN	USA 1-24	1	24	11N	23E	SEQUOYAH	4925	4650			4668
35135202170000	PARK AVE EXPL CORP	KUMPE	1	29	11N	24E	SEQUOYAH	4000	3758			3787

PLATES

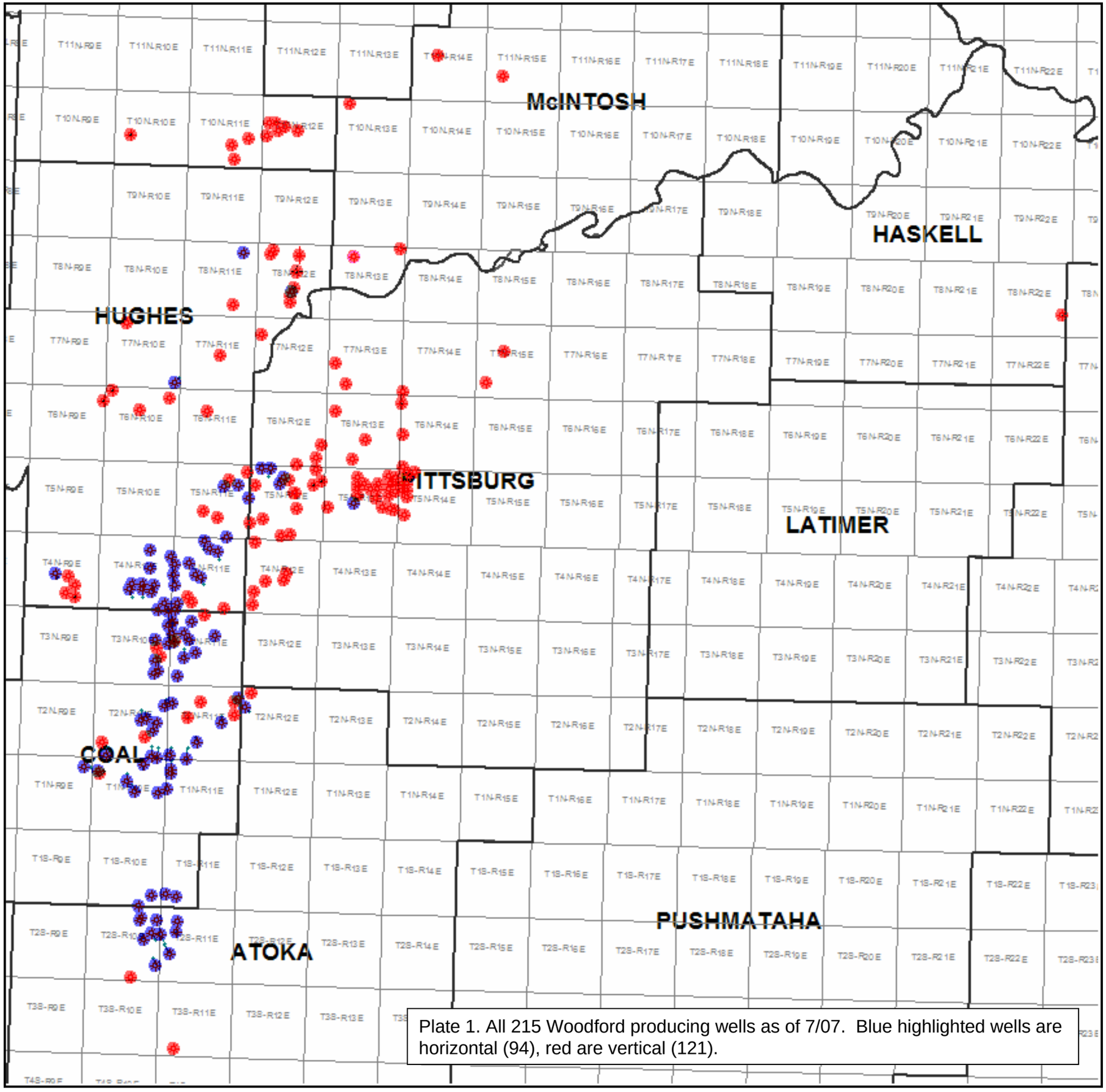

Plate 1. All 215 Woodford producing wells as of 7/07. Blue highlighted wells are horizontal (94), red are vertical (121).

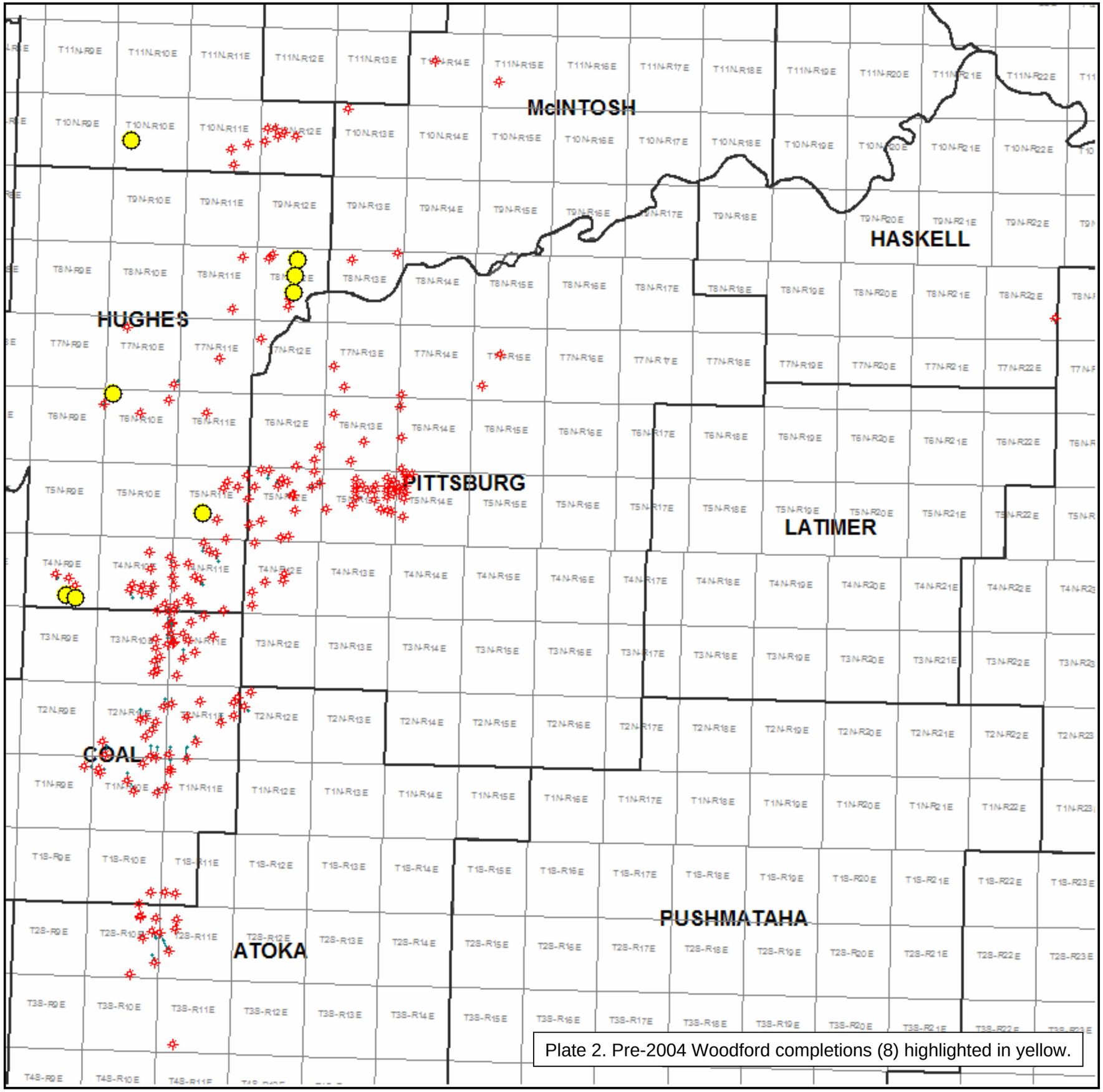

Plate 2. Pre-2004 Woodford completions (8) highlighted in yellow.

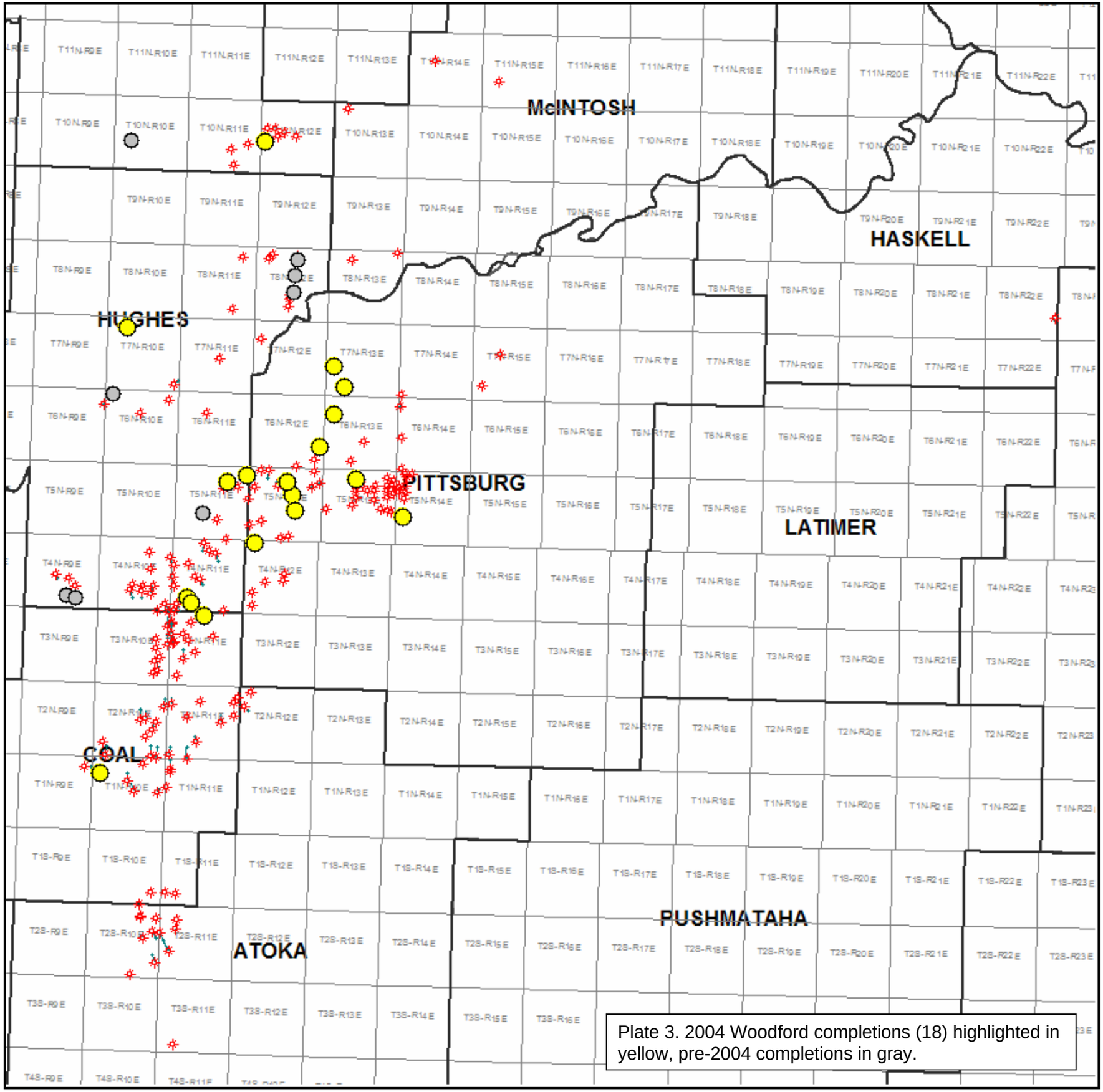

Plate 3. 2004 Woodford completions (18) highlighted in yellow, pre-2004 completions in gray.

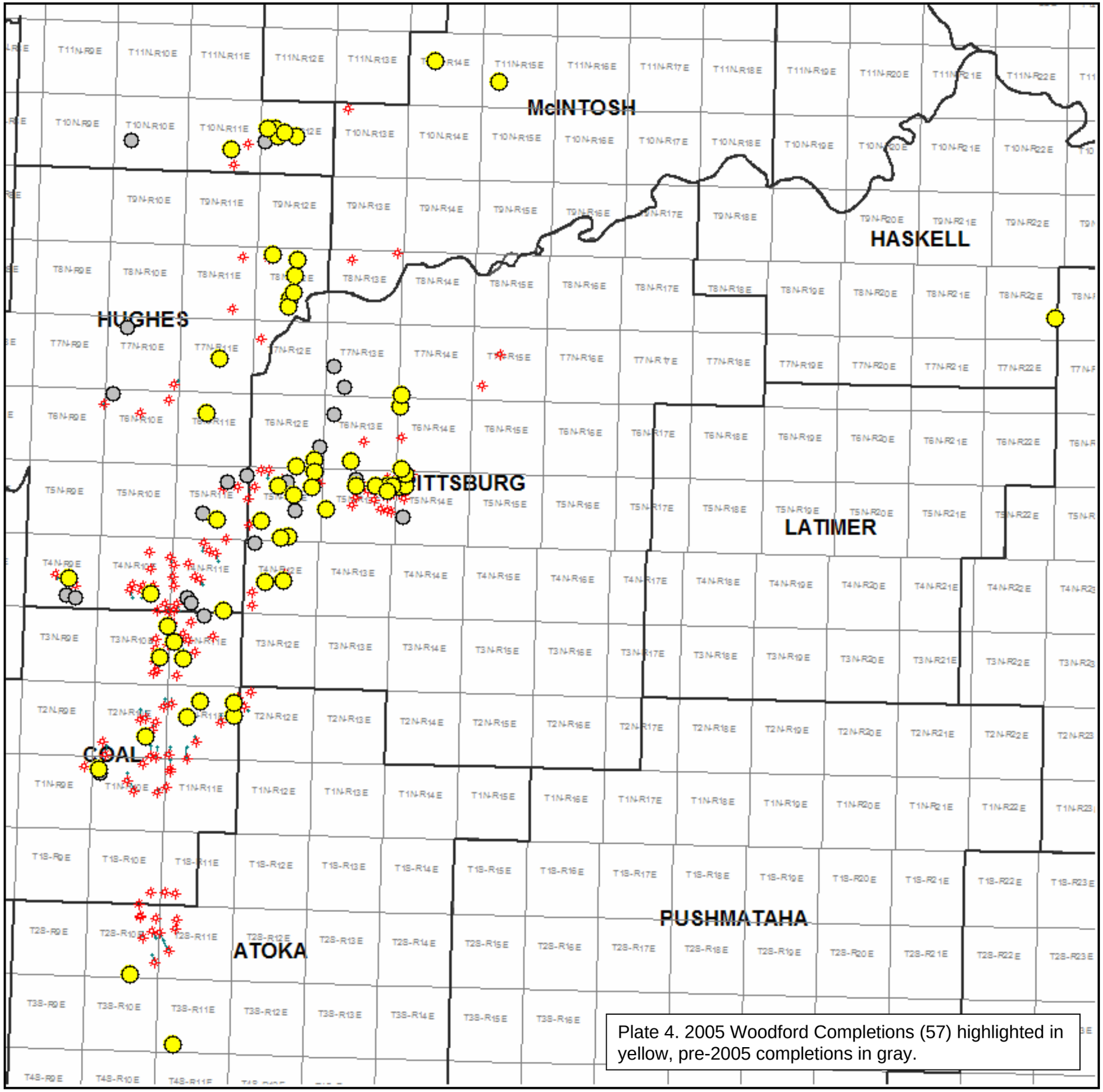

Plate 4. 2005 Woodford Completions (57) highlighted in yellow, pre-2005 completions in gray.

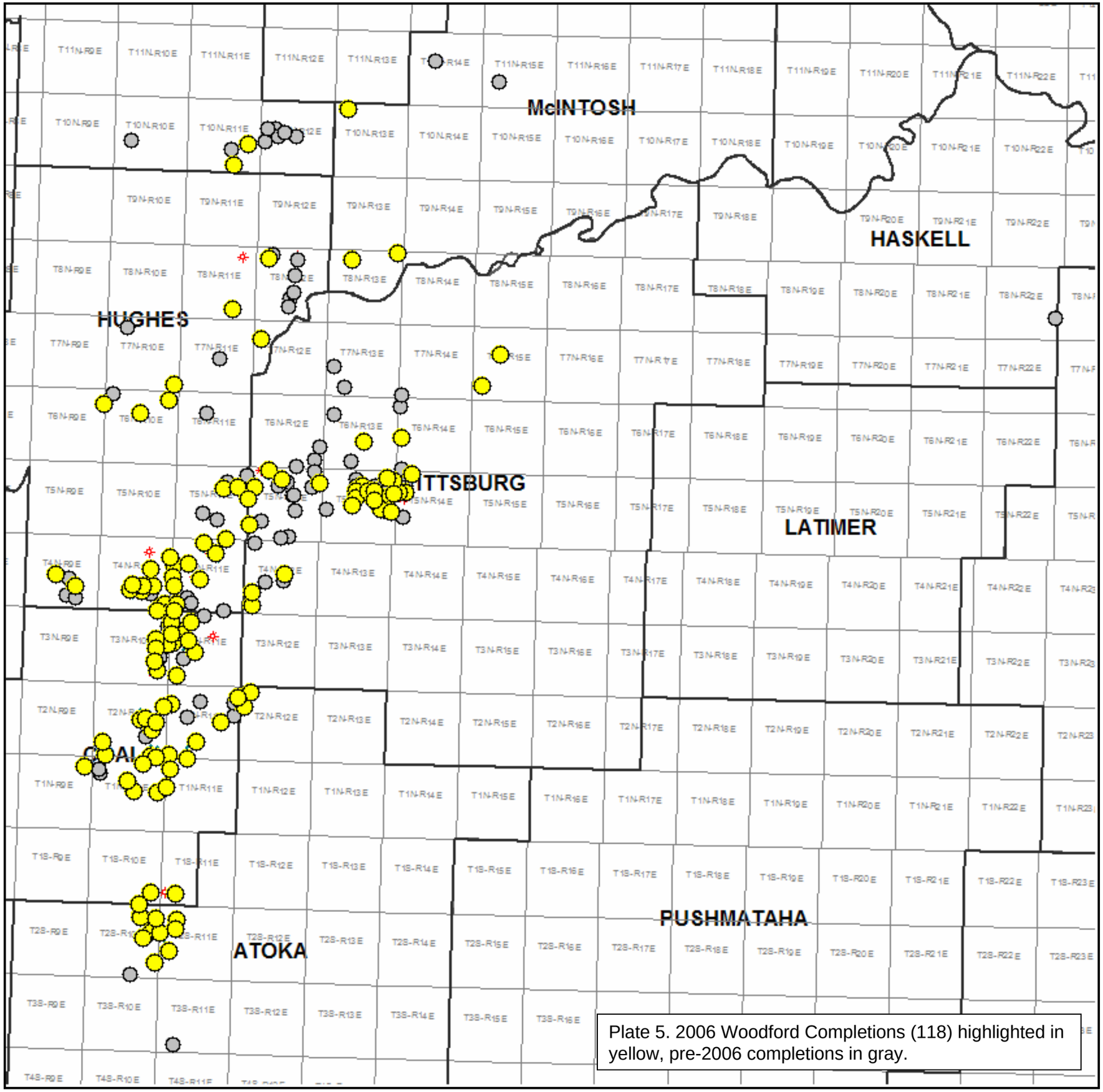

Plate 5. 2006 Woodford Completions (118) highlighted in yellow, pre-2006 completions in gray.

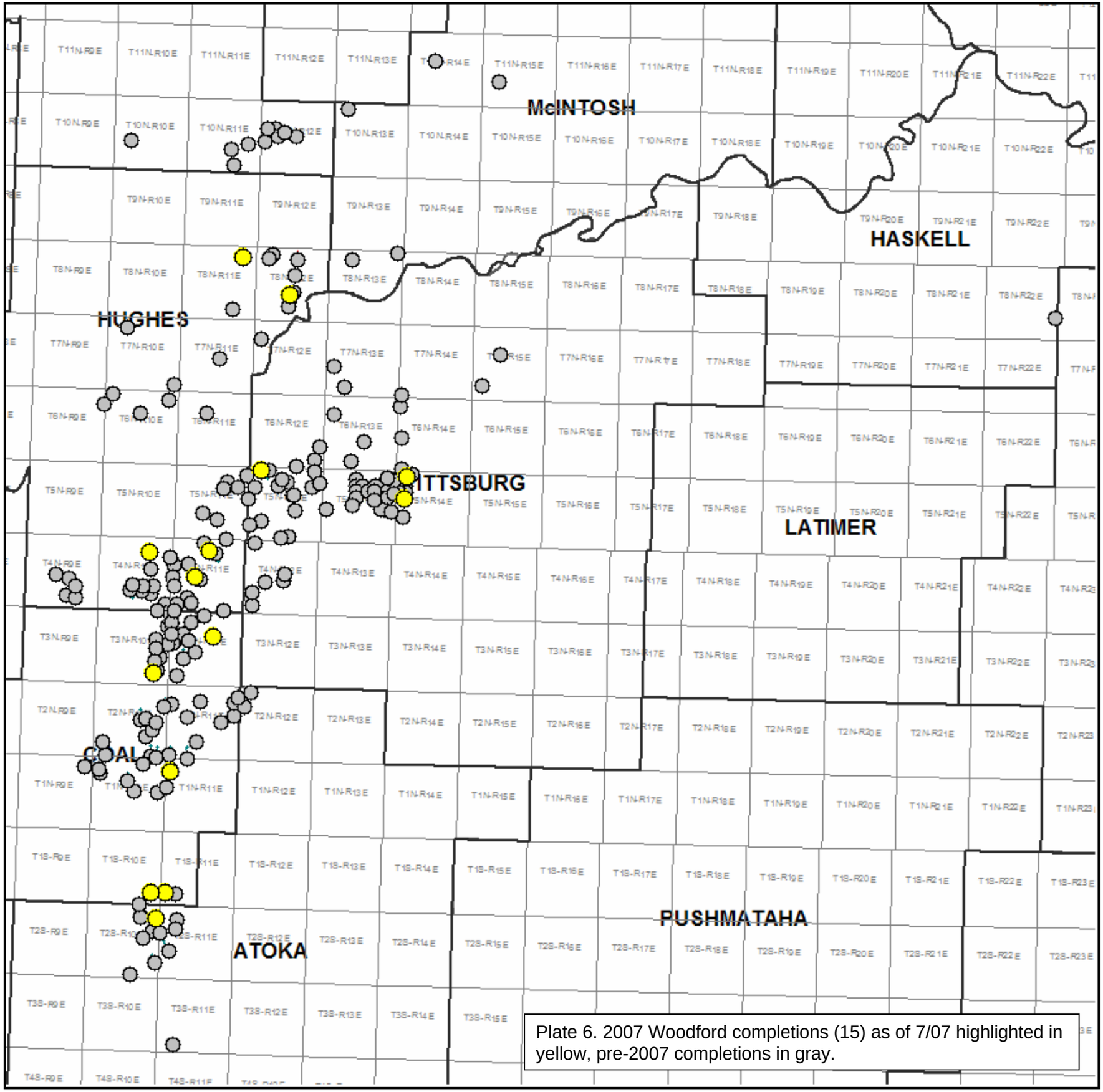

Plate 6. 2007 Woodford completions (15) as of 7/07 highlighted in yellow, pre-2007 completions in gray.

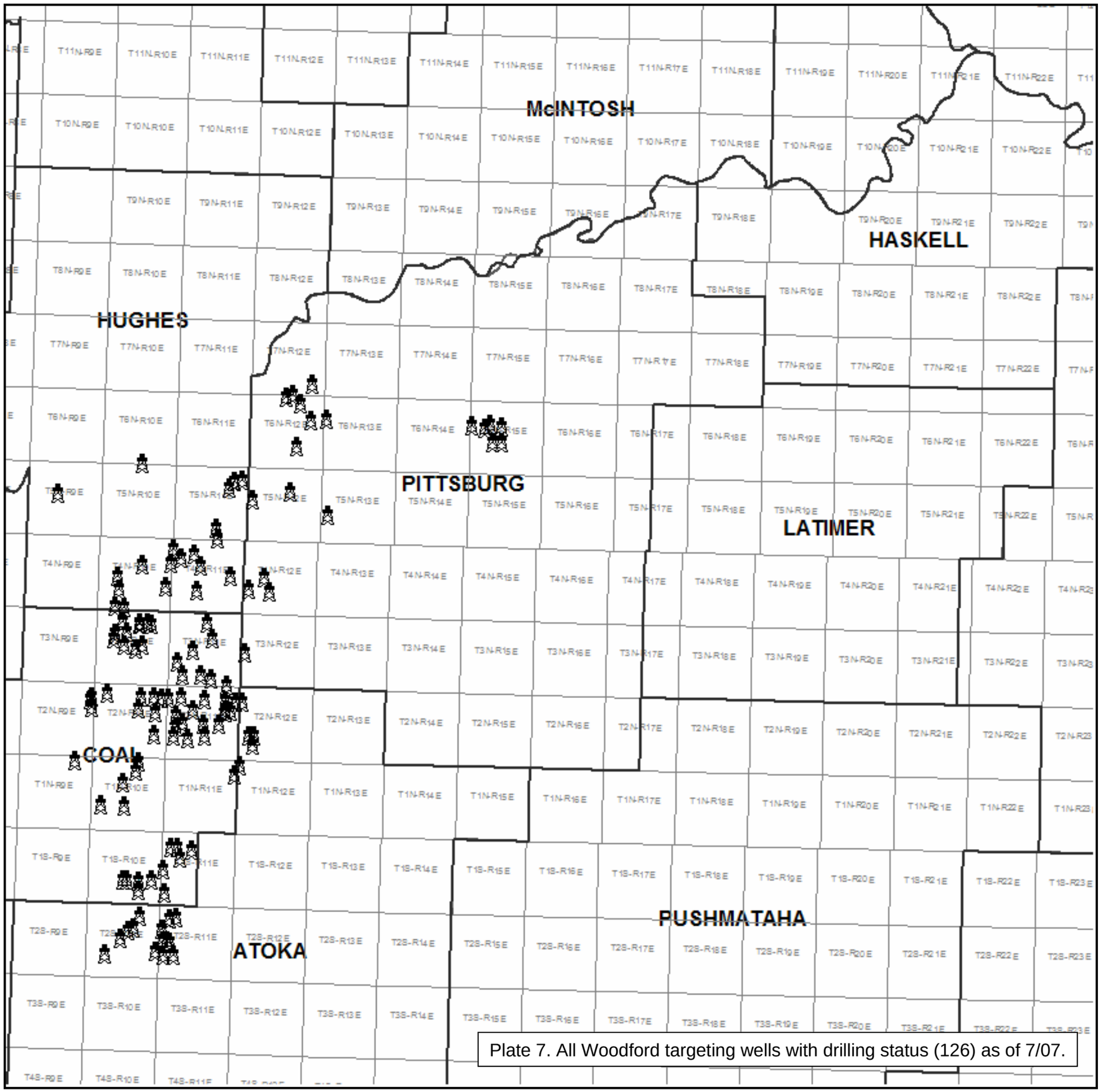

Plate 7. All Woodford targeting wells with drilling status (126) as of 7/07.

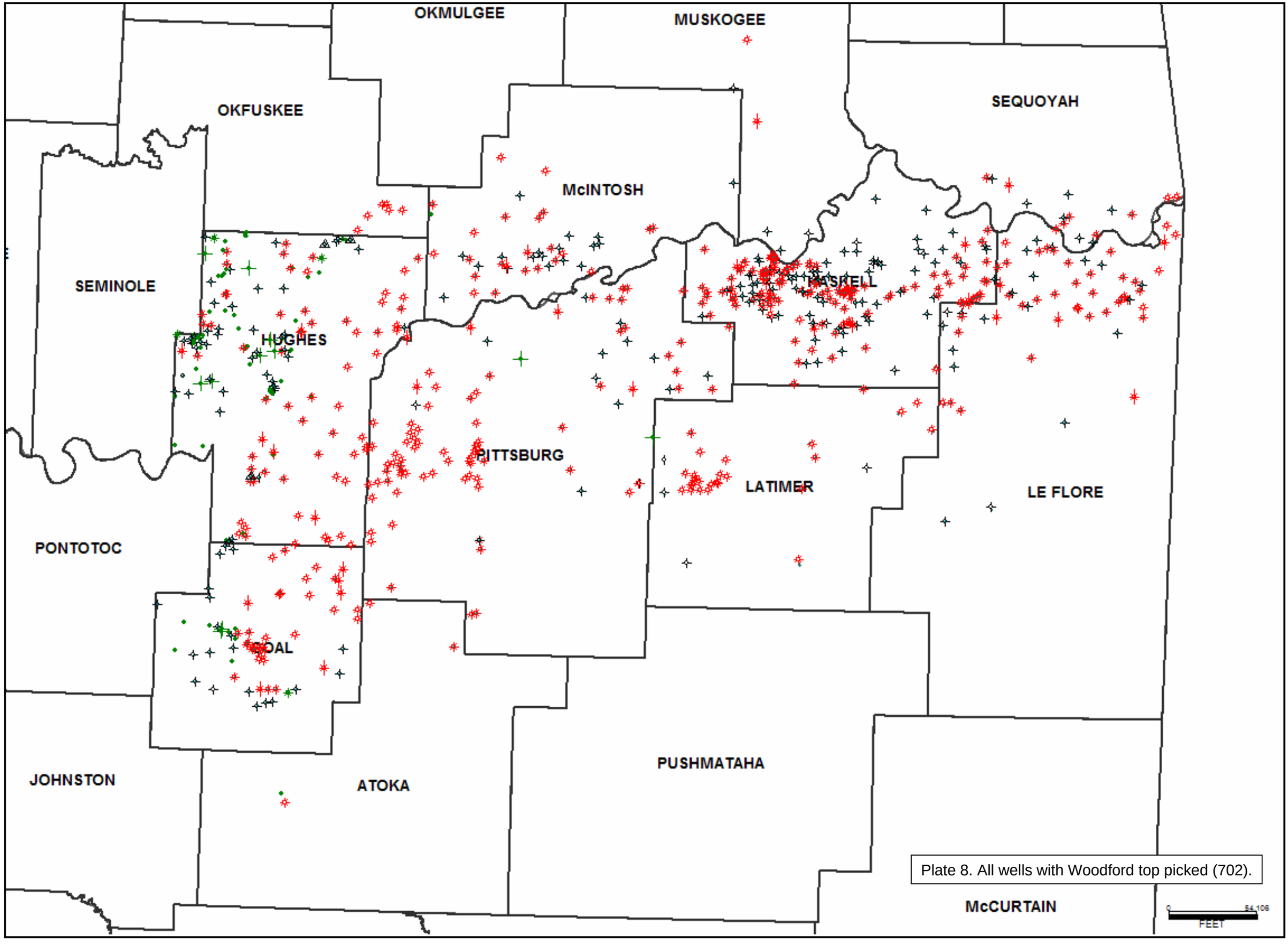

Plate 8. All wells with Woodford top picked (702).

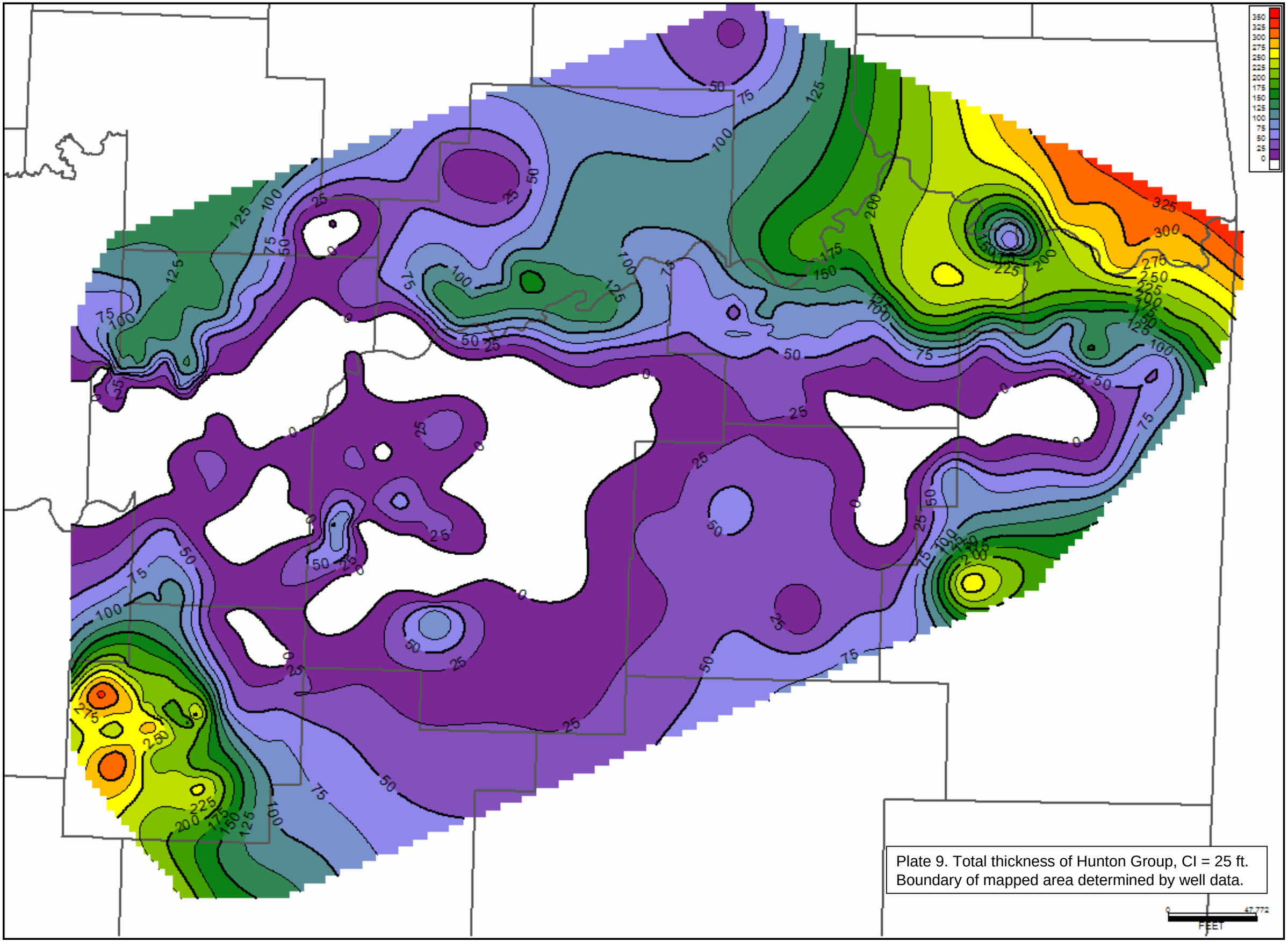

Plate 9. Total thickness of Hunton Group, CI = 25 ft.
Boundary of mapped area determined by well data.

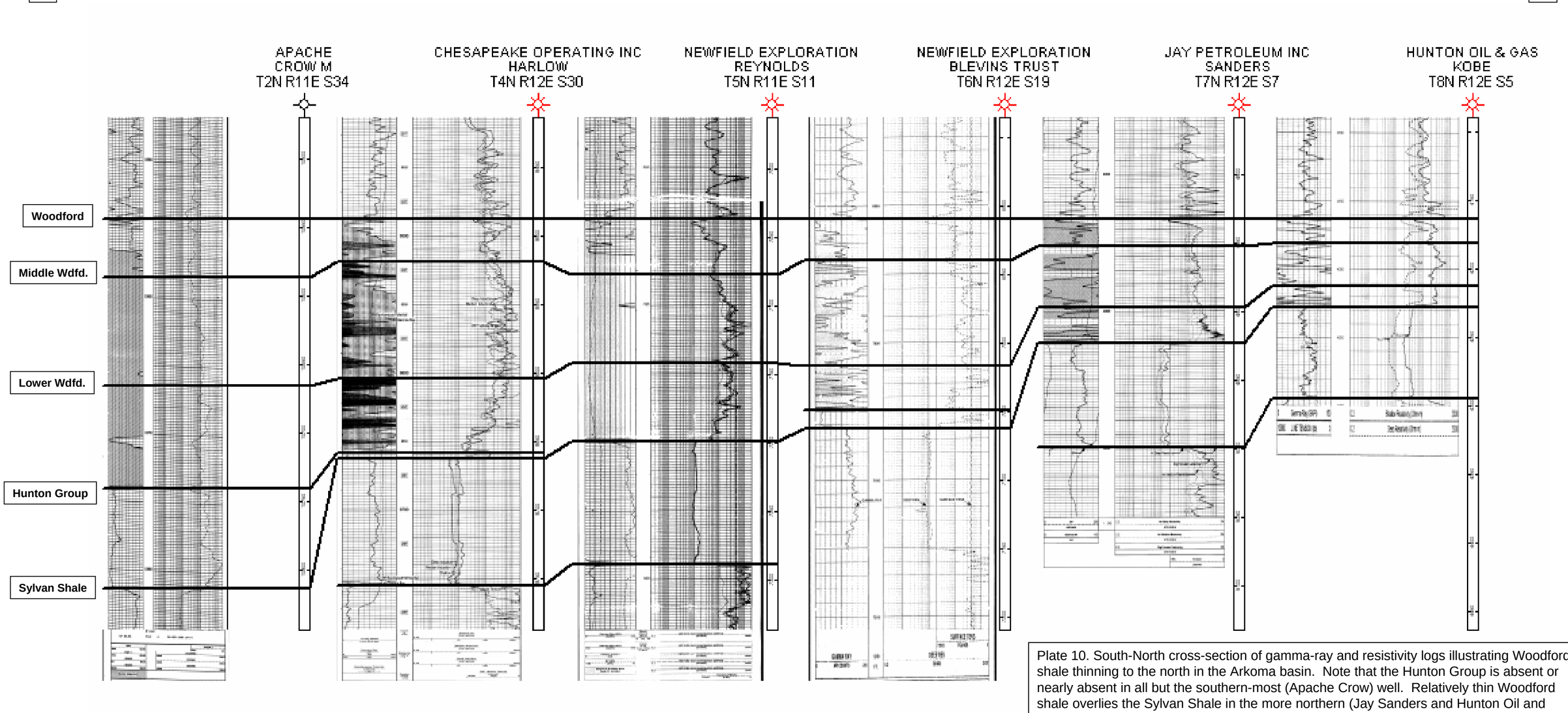

Plate 10. South-North cross-section of gamma-ray and resistivity logs illustrating Woodford shale thinning to the north in the Arkoma basin. Note that the Hunton Group is absent or nearly absent in all but the southern-most (Apache Crow) well. Relatively thin Woodford shale overlies the Sylvan Shale in the more northern (Jay Sanders and Hunton Oil and Gas Kobe) wells.

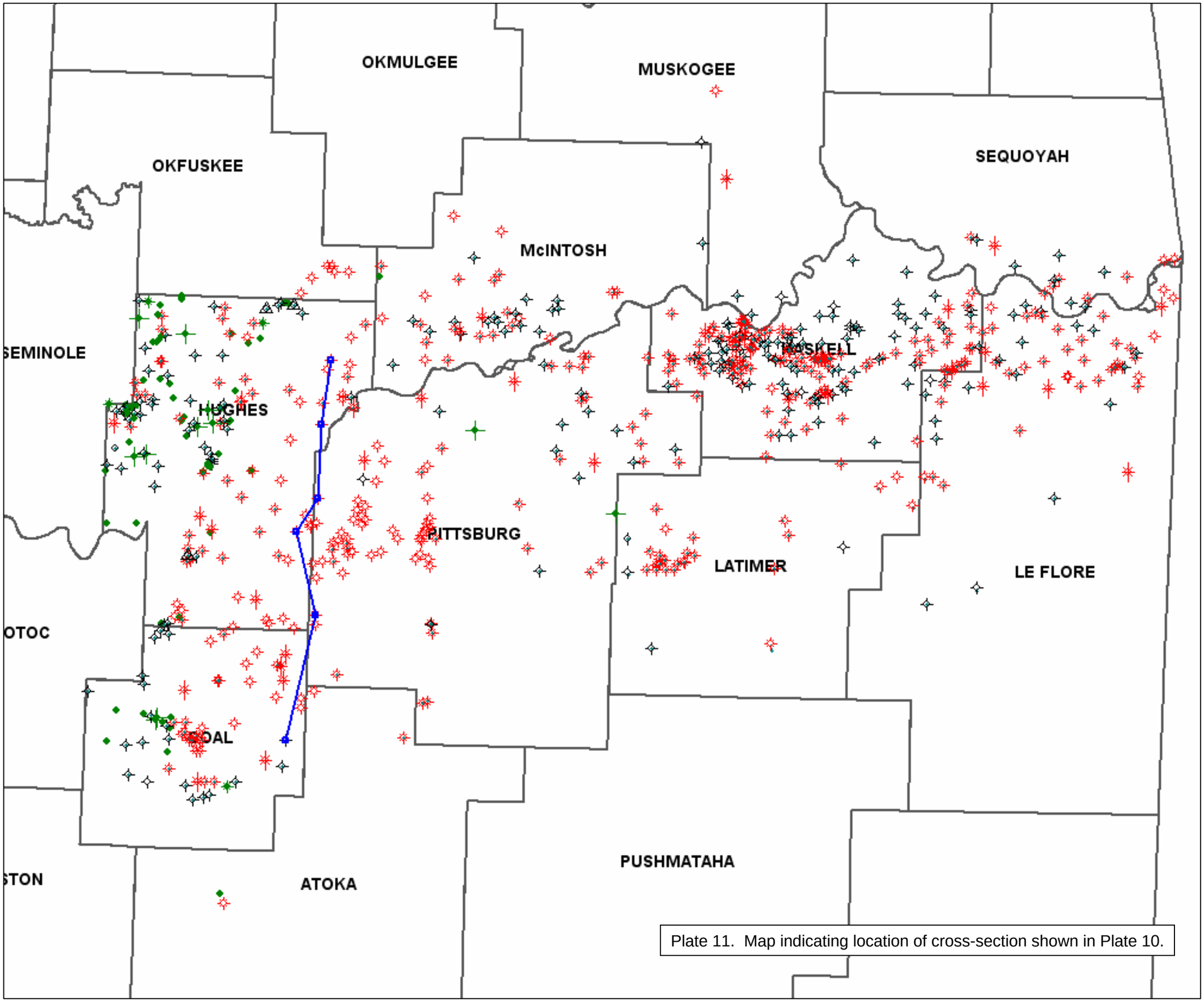

Plate 11. Map indicating location of cross-section shown in Plate 10.

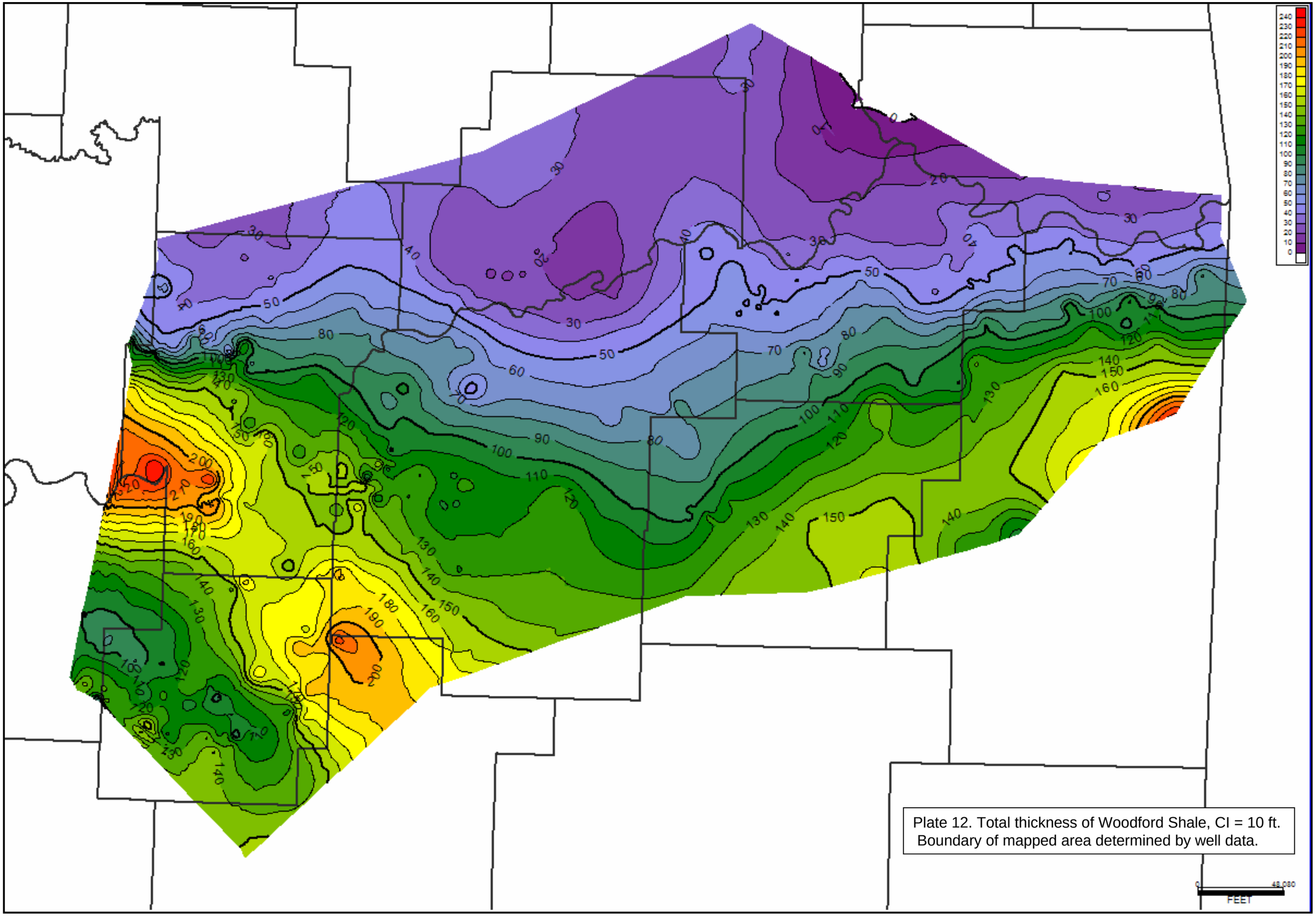

Plate 12. Total thickness of Woodford Shale, CI = 10 ft.
Boundary of mapped area determined by well data.

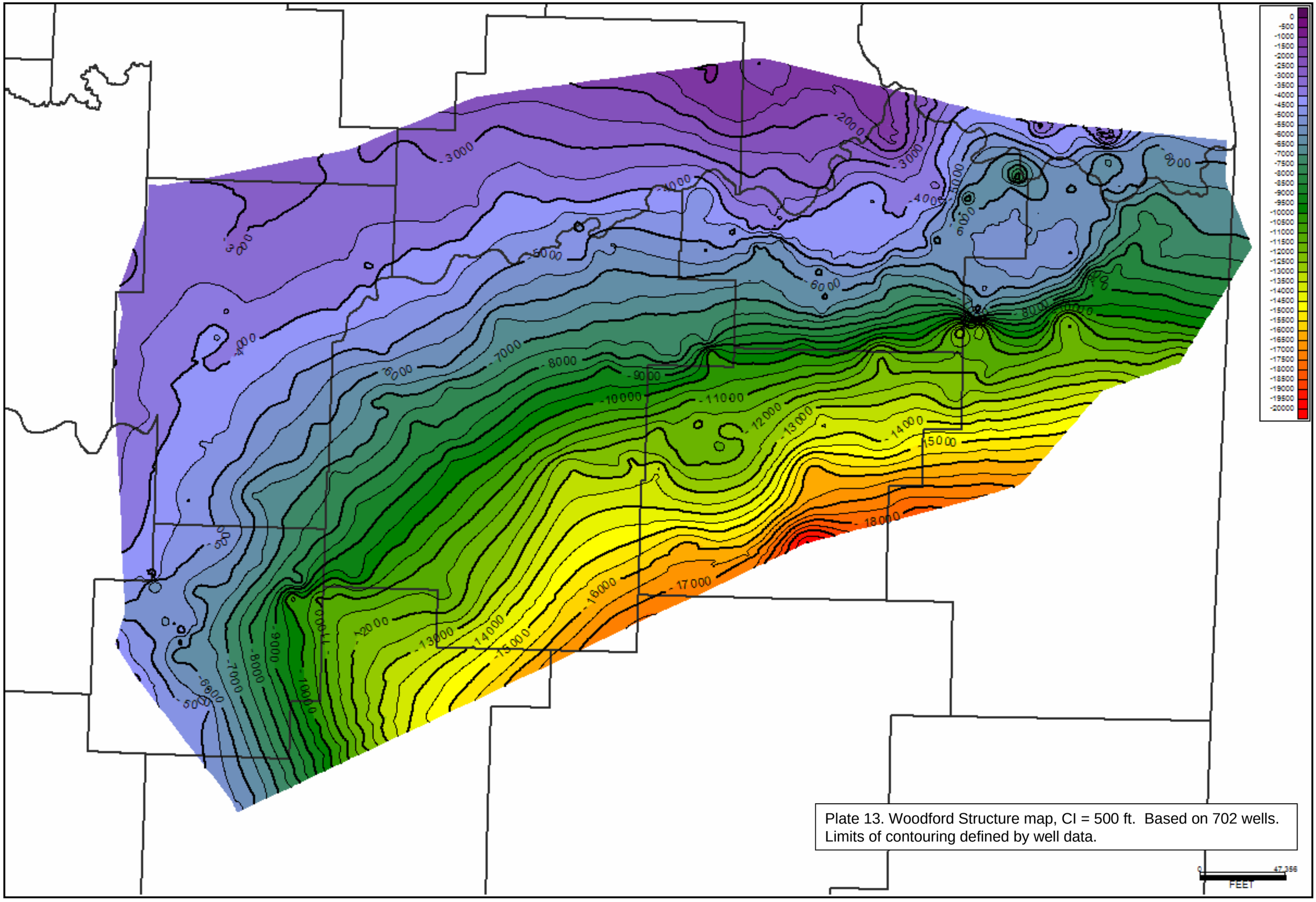

Plate 13. Woodford Structure map, CI = 500 ft. Based on 702 wells. Limits of contouring defined by well data.

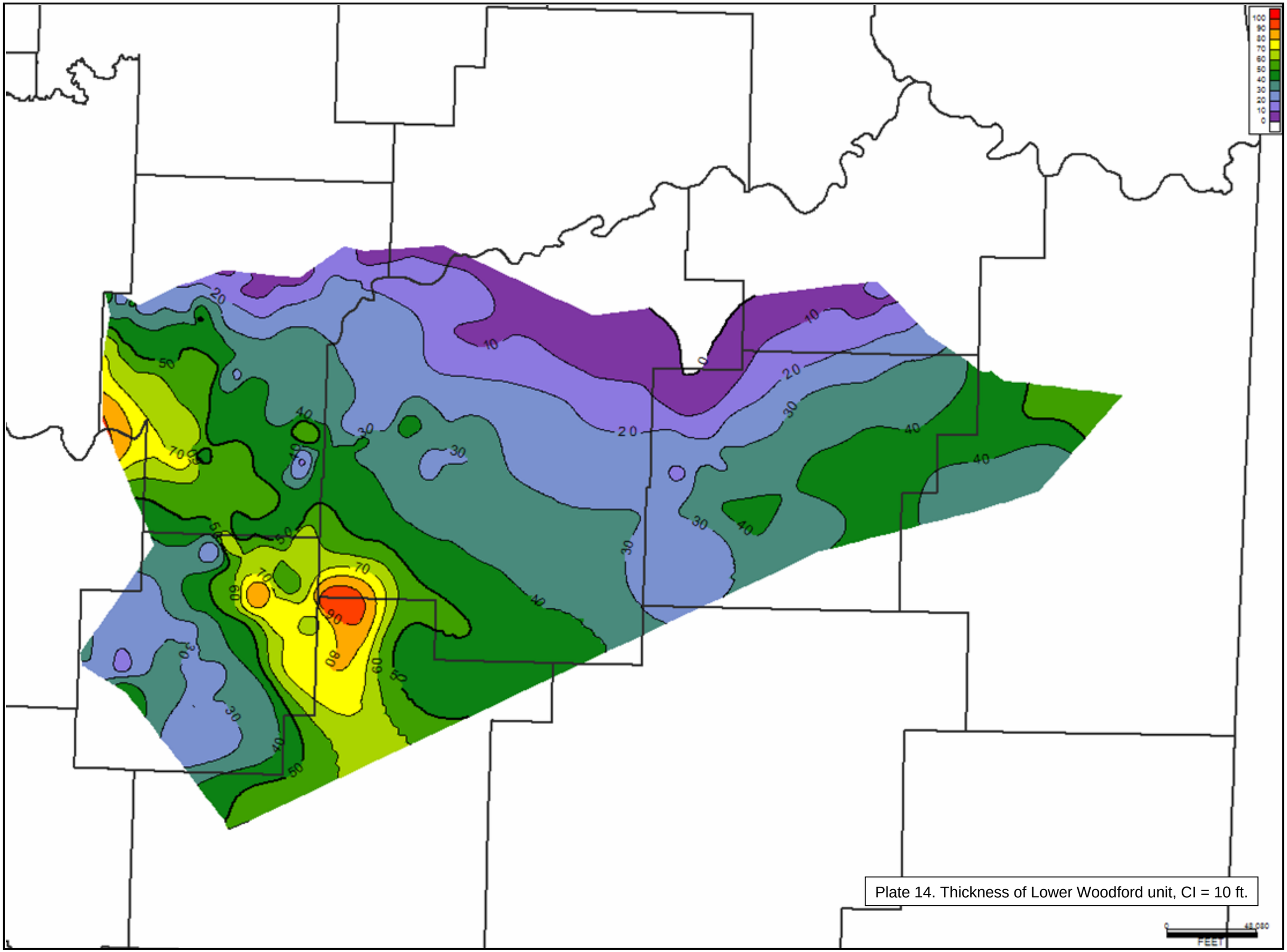

Plate 14. Thickness of Lower Woodford unit, CI = 10 ft.

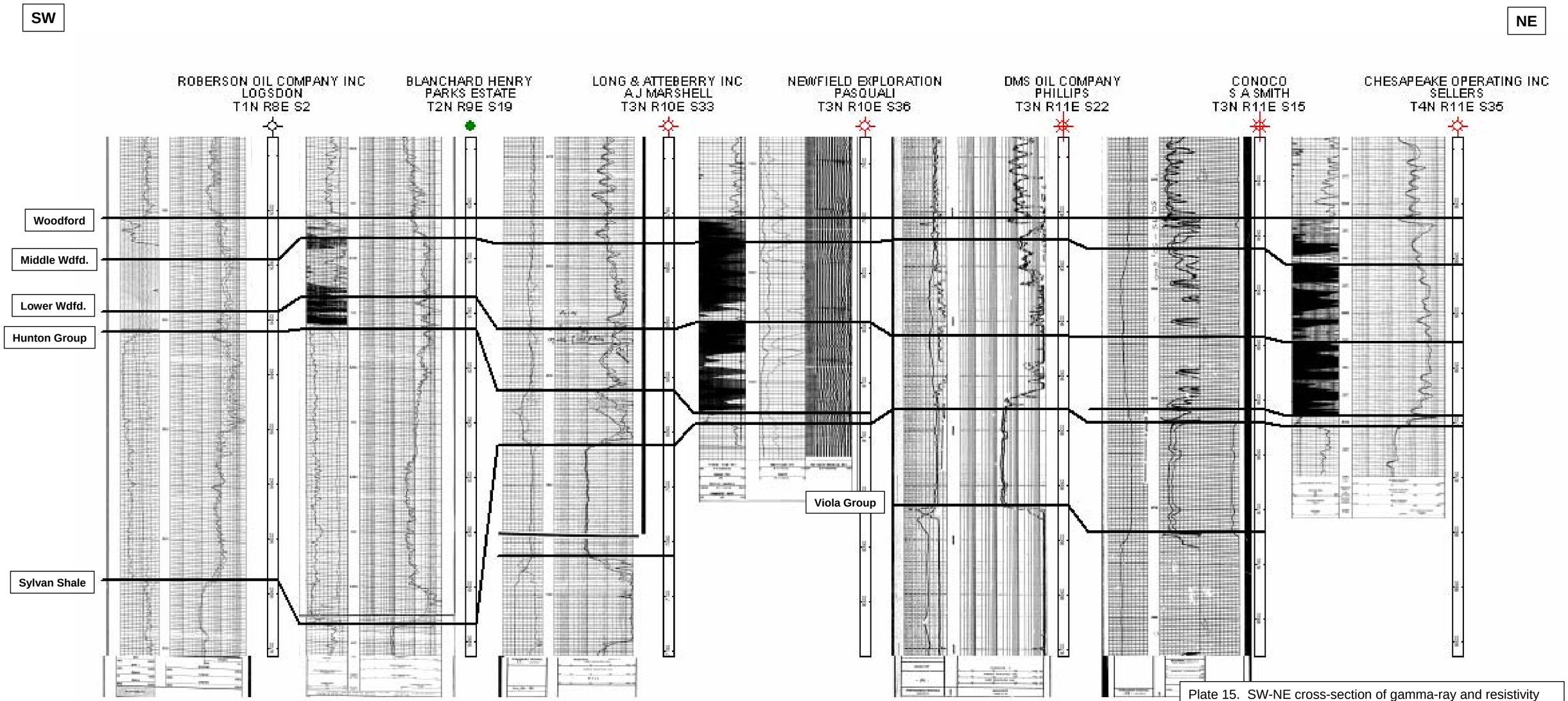

Plate 15. SW-NE cross-section of gamma-ray and resistivity logs from Coal County illustrating thickening of total Woodford and the lower Woodford unit over area with thin Hunton Group.

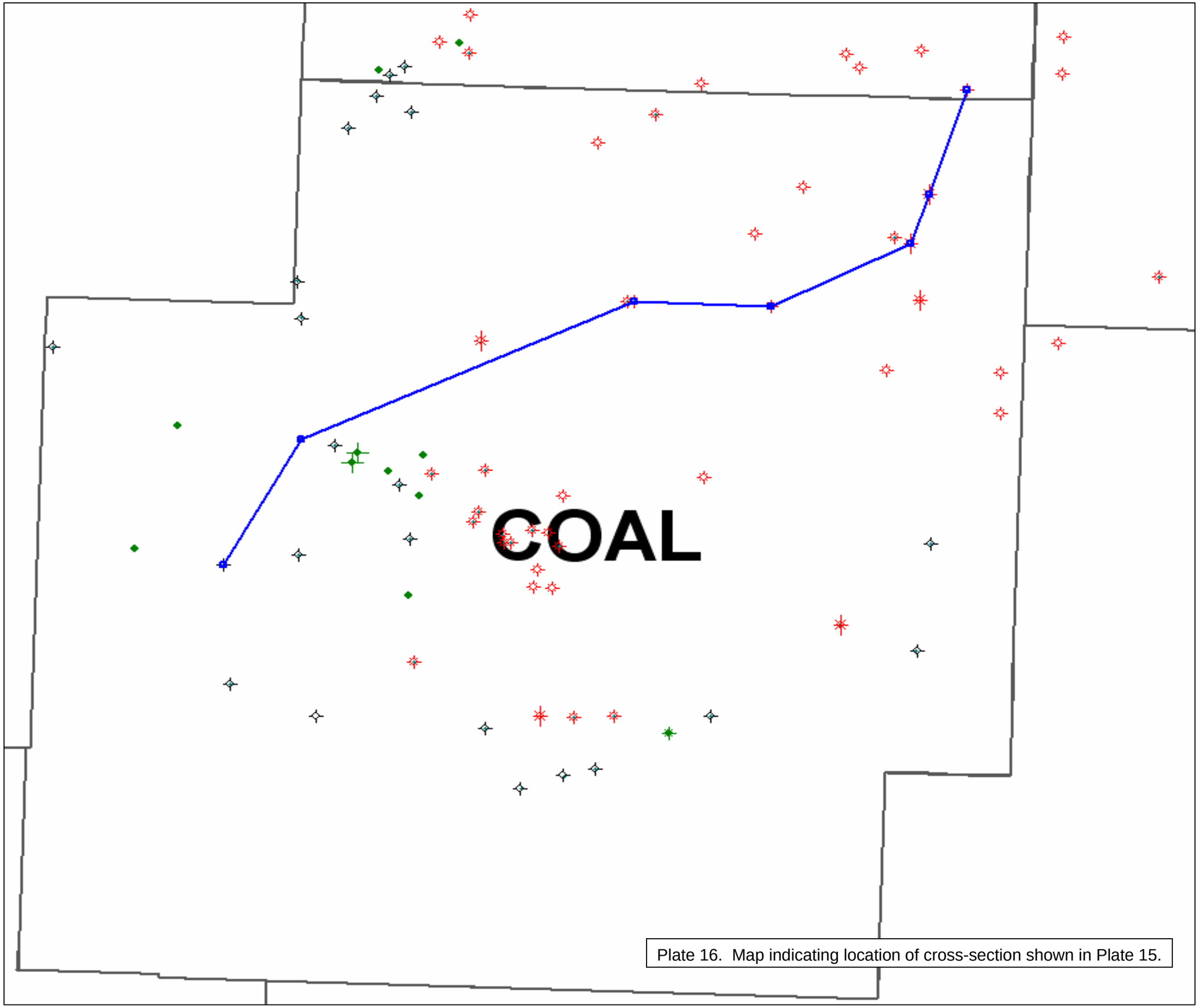

Plate 16. Map indicating location of cross-section shown in Plate 15.

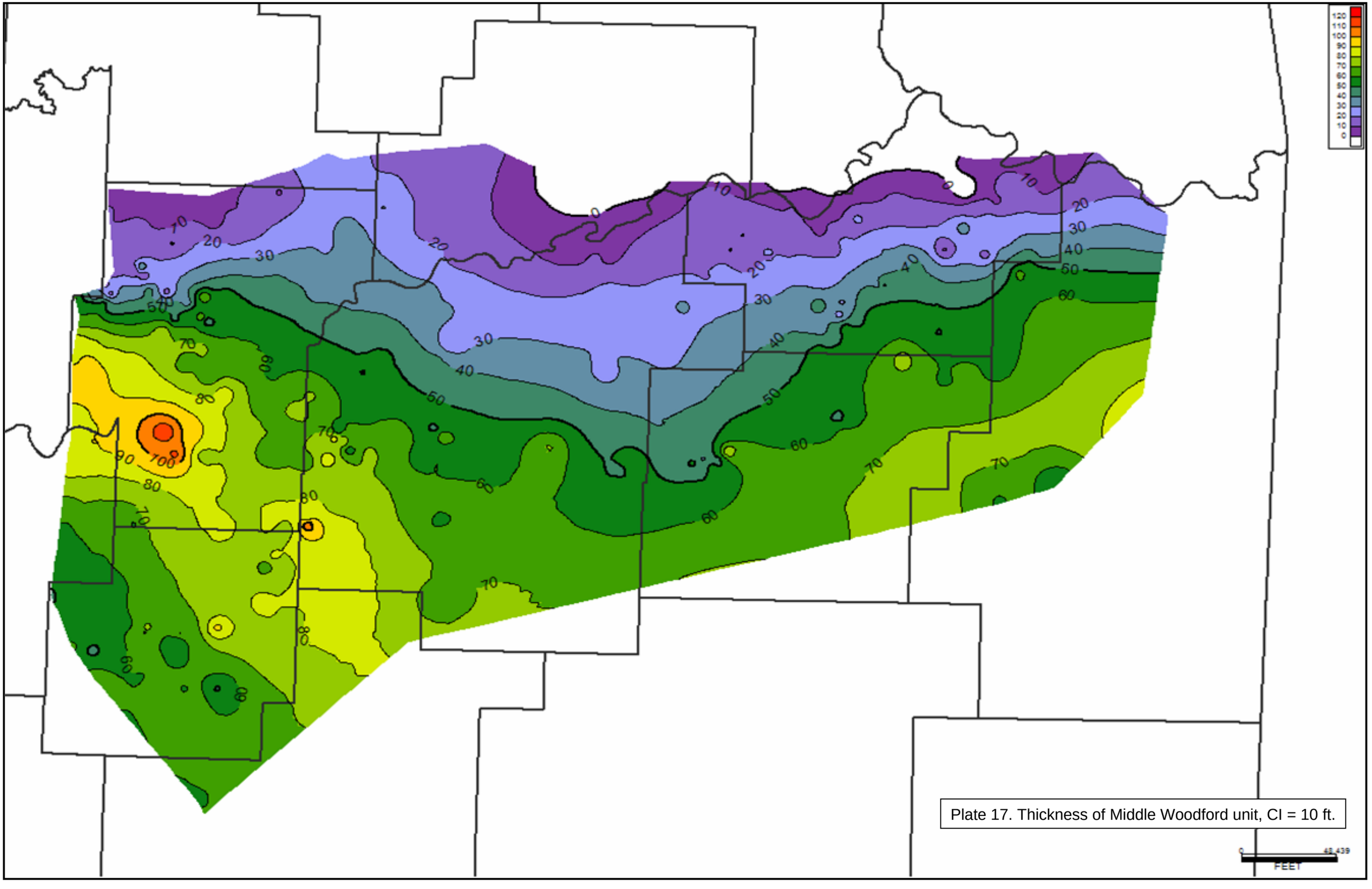

Plate 17. Thickness of Middle Woodford unit, CI = 10 ft.

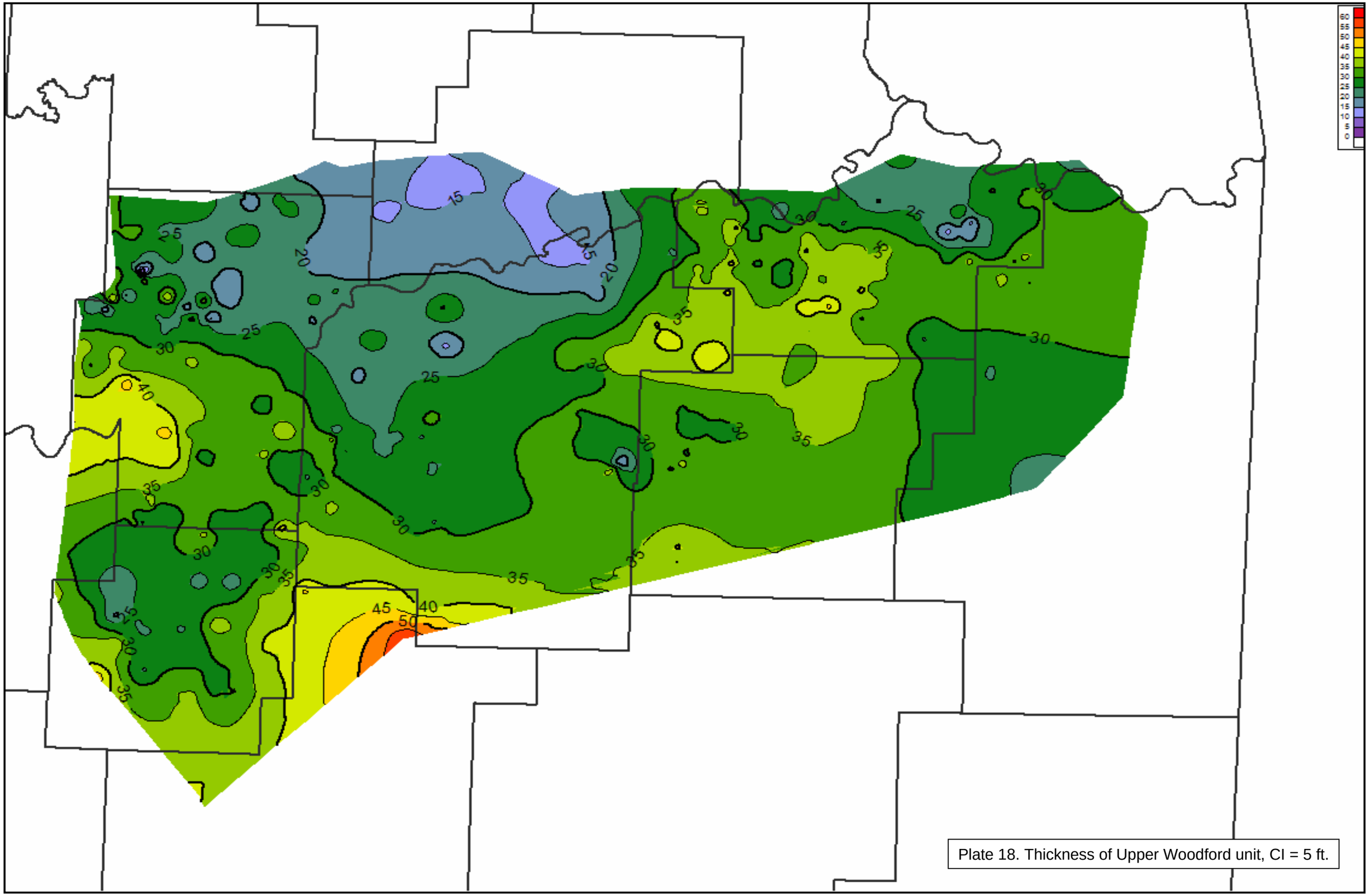

Plate 18. Thickness of Upper Woodford unit, CI = 5 ft.

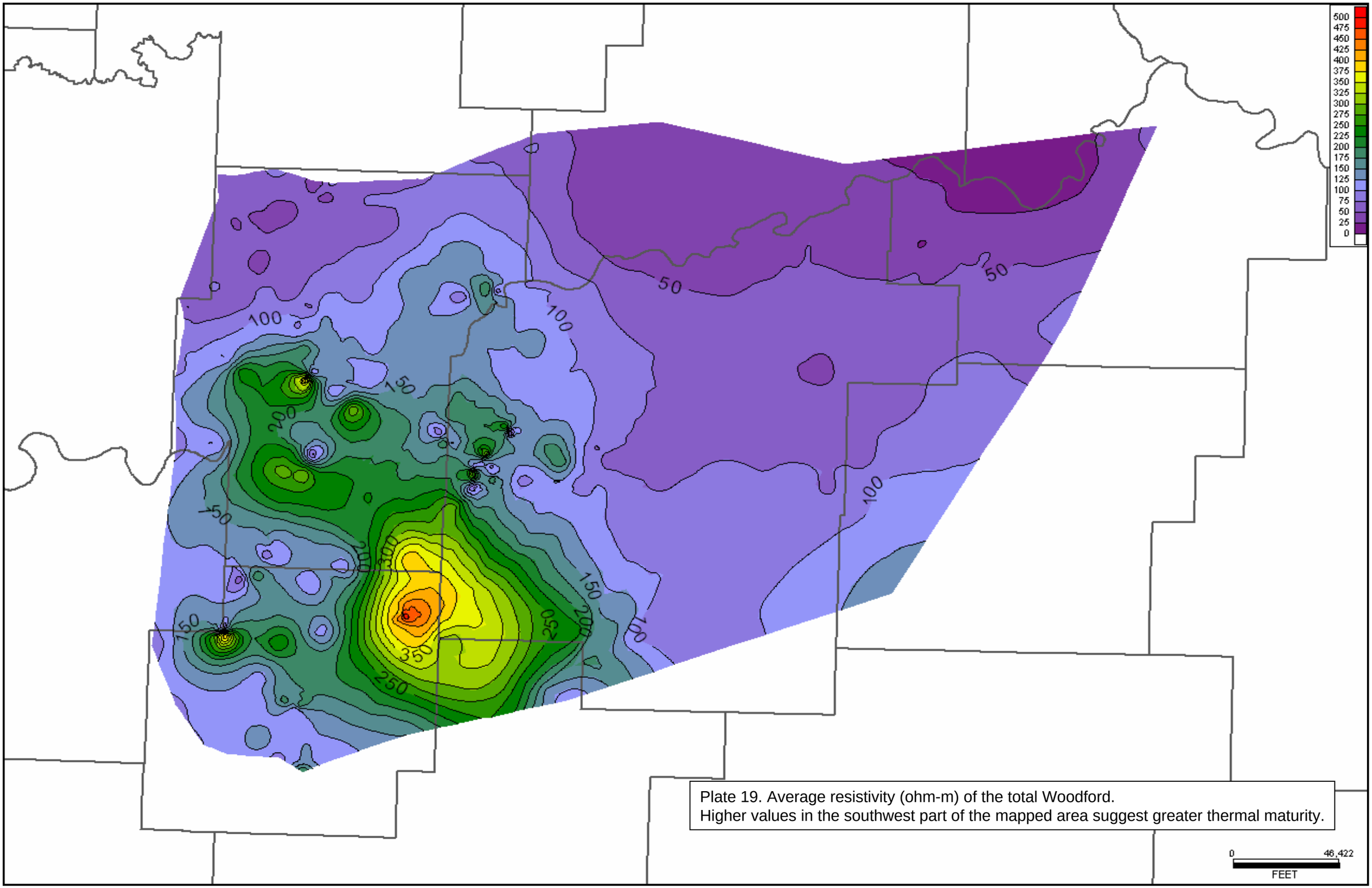

Plate 19. Average resistivity (ohm-m) of the total Woodford.
Higher values in the southwest part of the mapped area suggest greater thermal maturity.

VITA

Mack Andrew Blackford

Candidate for the Degree of

Master of Science

Thesis: ELECTROSTRATIGRAPHY, THICKNESS, AND PETROPHYSICAL EVALUATION OF THE WOODFORD SHALE, ARKOMA BASIN, OKLAHOMA

Major Field: Geology

Biographical:

Personal Data: Born in Hutchinson, Kansas, on November 10, 1983, to parents Earl and Marcy Blackford.

Education: Received Bachelor of Science degree in Geology from Oklahoma State University, Stillwater, Oklahoma in December, 2005. Completed the requirements for the Master of Science in Geology at Oklahoma State University, Stillwater, Oklahoma in December, 2007.

Experience: Geology internships at Nadel and Gussman, Inc. (2004-2005), Rockford Energy Partners (2006), and Questar Exploration and Production, Inc. (2007). Employed as introductory geology laboratory teaching assistant for one year by Oklahoma State University.

Professional Memberships: American Association of Petroleum Geologists.

Name: Mack Andrew Blackford Date of Degree: December, 2007

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: ELECTROSTRATIGRAPHY, THICKNESS, AND PETROPHYSICAL EVALUATION OF THE WOODFORD SHALE, ARKOMA BASIN, OKLAHOMA

Pages in Study: 84 Candidate for the Degree of Master of Science

Major Field: Geology

Scope and Method of Study: This study was intended to evaluate the gas-shale potential of the Woodford Shale in the Arkoma basin and address four questions: 1.) Can well-logs be used to construct the informal stratigraphy of the Woodford? 2.) What is the distribution of these informal units? 3.) Can log-derived characteristics delineate higher gas-volume producing areas within the Woodford gas-shale play? 4.) What other analyses are useful in evaluating Woodford production potential in untested areas? Well logs, especially resistivity and gamma-ray curves, provided necessary data. Wireline log characteristics were compared to production data. Thickness maps were generated for the total Woodford section and each informal stratigraphic unit.

Findings and Conclusions: An informal stratigraphic framework was established for the Woodford Shale in the Arkoma basin from well-logs. Three informal units were defined and mapped. Log-derived characteristics were compiled and average thickness, density, and gamma-ray intensity were calculated for each unit. Specific resistivity and density criteria were identified that corresponded with higher volume gas production.

ADVISER'S APPROVAL: Dr. Jim Puckette