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After a Century—Revised Paleogene Coal Stratigraphy, Correlation, and Deposition, Powder River Basin, Wyoming and Montana

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Cover. Highwall at Antelope Coal Mine, east of Wright, Wyoming, shows Wyodak-Anderson coal beds split by crevasse-channel/splay deposits that grade upward into rider coal beds that "wrap" around underlying fluvial channel sandstones due to differential compaction. Photograph by T. Thamm, Antelope Mine, owned and operated by Cloud Peak Energy Inc.

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By Romeo M. Flores, Brianne D. Spear, Scott A. Kinney, Peter A. Purchase, and Craig M. Gallagher

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Abstract

The stratigraphy, correlation, mapping, and depositional history of coal-bearing strata in the Paleogene Fort Union and Wasatch Formations in the Powder River Basin were mainly based on measurement and description of outcrops during the early 20th century. Subsequently, the quality and quantity of data improved with (1) exploration and development of oil, gas, and coal during the middle 20th century and (2) the onset of coalbed methane (CBM) development during the late 20th and early 21st centuries that resulted in the drilling of more than 26,000 closely spaced wells with accompanying geophysical logs. The closeness of the data control points, which average 0.5 mi (805 m) apart, made for better accuracy in the subsurface delineation and correlation of coal beds that greatly facilitated the construction of regional stratigraphic cross sections and the assessment of resources.

The drillhole data show that coal beds previously mapped as merged coal zones, such as the Wyodak coal zone in the Wyoming part of the Powder River Basin, gradually thinned into several discontinuous beds and sequentially split into as many as 7 hierarchical orders westward and northward. The thinning and splitting of coal beds in these directions were accompanied by as much as a ten-fold increase in the thicknesses of sandstone-dominated intervals within the Wyodak coal zone. This probably resulted from thrust loading by the eastern front of the Bighorn uplift accompanied by vertical displacement along lineaments that caused subsidence of the western axial part of the Powder River Basin during Laramide deformation in Late Cretaceous and early Tertiary time. Accommodation space was thereby created for synsedimentary alluvial infilling that controlled thickening, thinning, splitting, pinching out, and areal distribution of coal beds. Equally important was differential subsidence between this main accommodation space and adjoining areas, which influenced the overlapping, for example, of the Dietz coal zone in Montana, over the Wyodak coal zone in Wyoming. Correlation in a circular track of the Wyodak coal zone in the southern part of the basin also demonstrates overlapping with lower coal zones. Recognition of this stratigraphic relationship has led to revision of the correlations and nomenclature of coal beds because of inconsistency within these zones as well as those below and above them, which have long been subjects of controversy. Also, it significantly changes the traditional coal bed-to-bed correlations, and estimates of coal and coalbed methane resources of these coal zones due to thinning and pinching out of beds. More notably, thickness isopach, orientation, and distribution of the merged Wyodak coal bodies in the south-southeast part of the basin suggest that differential movement of lineament zones active during the Cretaceous was not a major influence on coal accumulation during the Paleocene.

Improved knowledge of alluvial depositional environments as influenced by external and internal paleotectonic conditions within the Powder River Basin permits more accurate correlation, mapping, and resource estimation of the Fort Union and Wasatch coal beds. The result is a better understanding of the sedimentology of the basin infill deposits in relation to peat bog accumulation.

Introduction

More than 100 years ago, Taff (1909) published the first formal coal stratigraphy and nomenclature system for the Paleogene Fort Union and Wasatch Formations in the Powder River Basin (PRB) in Wyoming and Montana (fig. 1), based on a study of the Sheridan coalfield in Wyoming. This and other early studies of the coal-bearing strata in the basin had a variety of objectives: (1) some were directed only toward identifying and describing outcrops of coal and related beds; (2) others focused on determining the extent of minable coal beds, estimating resources, and calculating proven reserves; and (3) still others worked primarily on stratigraphy and sedimentology to gain an understanding of depositional environments. Although providing much basic geologic and resource data (referenced throughout this paper) for use in later studies, these investigations were not well coordinated or integrated. This has led to much confusion, basinwide, over the names, correlation, and distribution of individual coal beds that requires resolution in order to make meaningful estimates of both coal and coalbed methane (CBM) resources in the PRB.

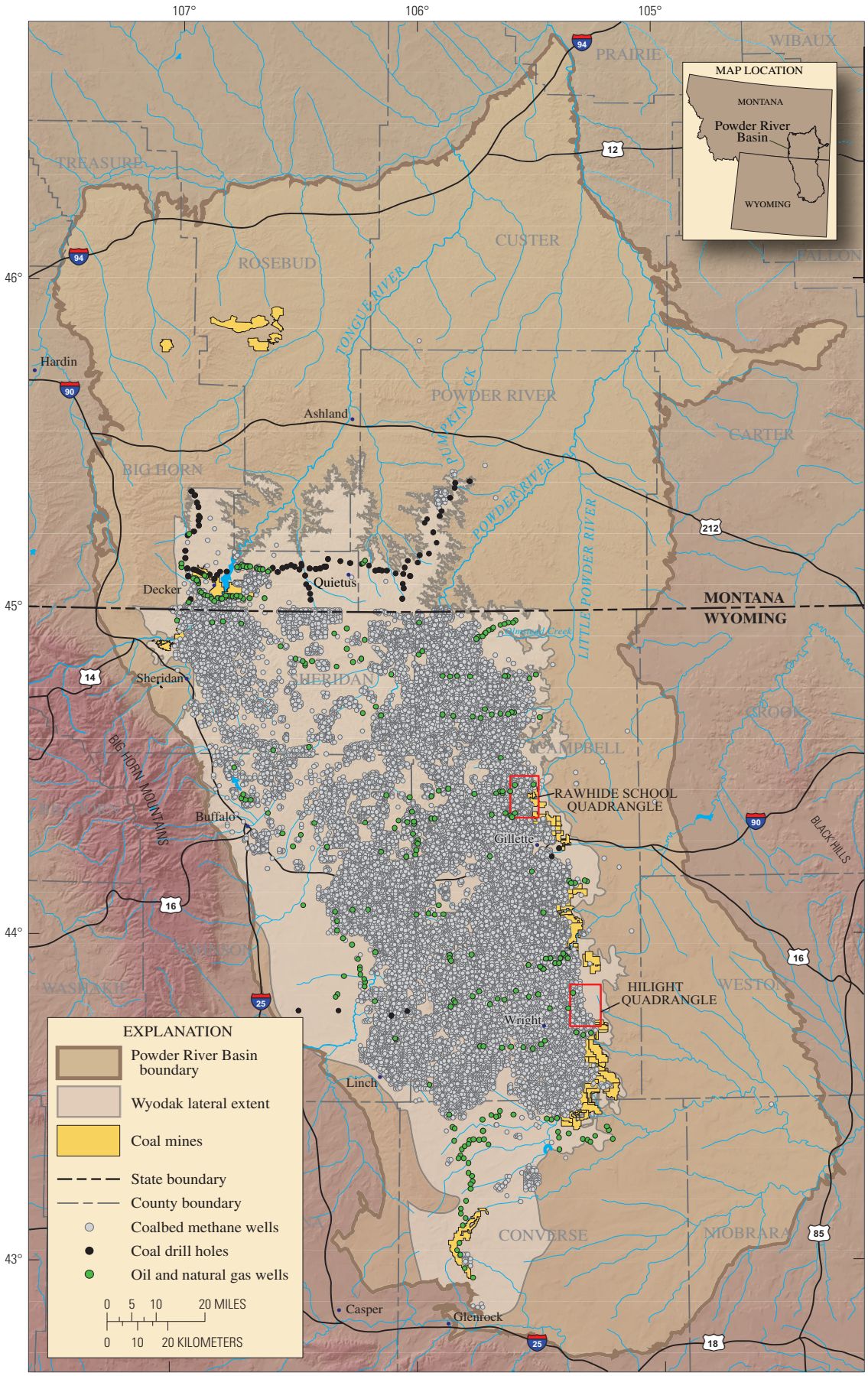

Figure 1. Map of the Powder River Basin showing the data points and active mining areas in Wyoming and Montana.

More recent studies of coal-bearing strata in the PRB, with the emphasis toward determining patterns of deposition and establishing a detailed stratigraphic framework, take full advantage of the extensive development of CBM resources for which some 26,000 wells have been drilled to date (fig. 1). In particular, geophysical logs from about 20,350 of these CBM wells combined with the more than 5,200 geophysical logs (oil, gas, and coal drillholes) used by Flores and others (1999) for the 1995–1999 U.S. Geological Survey (USGS) National Coal Resource Assessment in the PRB, makes possible the development of depositional models, which show that individual rock types occur in one or more specific arrangements of depositional patterns or facies that can be related to certain processes and genetic events.

Importantly, it has long been acknowledged that vertical and horizontal variations of rock bodies are controlled by depositional environments, as is demonstrated by coal-bearing sequences in the United States and worldwide (Rahmani and Flores, 1984; McCabe and Parrish, 1992). This concept has been extensively tested in modern depositional environments, and can be applied to Carboniferous coal-bearing rocks in the Appalachian and Illinois Basins, Cretaceous coal-bearing rocks in the Rocky Mountain basins, and Tertiary coal-bearing rocks in the Gulf Coast Basin. Despite age differences, it is well known that in these basins coal beds formed in swamps or bogs of fluvial and deltaic environments overprinted by rise and fall of sea levels, which in turn modified the frequency of accumulation, occurrence, distribution, and stratigraphic variations of the coal beds. In contrast, during the Laramide deformation in the developing basins of the Rocky Mountain foreland such as the PRB, coal beds formed in bogs of intermontane fluvial and lacustrine environments overprinted by tectonism, which modified the nature of accumulation, areal distribution and trends, and vertical and lateral variations of coal and related beds (Ayers, 1986; Flores, 1981, 1983, 1986, 2003).

Objectives of Study

The objectives of this study are to: (1) revise and improve the mapping of coal beds of the Fort Union and Wasatch Formations based on the extensive dataset now available at the Wyoming Oil and Gas Conservation Commission (WOGCC) website; (2) explain the marked irregularities in thickness, lateral trends, and stratigraphic position of potential economically important coal beds as possible gas resources (for example, CBM and underground gasification), based on closely spaced data points; (3) draw inferences concerning depositional facies as related to the mapping of the coal beds; and (4) apply the coal-bed nomenclature system approved by the USGS Geologic Names Committee and as published by USGS workers in the PRB (Taff, 1909; Baker, 1929; Olive, 1957; Mapel, 1973; McKay, 1973; Bryson and Bass, 1973; McKay and Mapel, 1973; Kent, 1976; Culbertson and others, 1979; Kent and others, 1980; table 1).

These objectives were somewhat difficult to implement, particularly the latter objective, because of the proliferation of coal-bed names in the PRB that were used inconsistently for mapping, and their common misapplication when identifying CBM reservoirs. Putting this objective into practice was made more of a challenge by the fact that many practitioners of coal stratigraphy in the PRB are using the same CBM dataset but differ in their interpretations of the data (Goolsby and Finley, 2000; DeBruin and others, 2001; Jones and Rodgers, 2007; Jones, 2008; Luppens and others, 2008; countless geologists from about 100 gas companies in the PRB).

Historical Coal Geology and Stratigraphy

Many concepts concerning the stratigraphy of coal-bearing strata of Paleogene age in the PRB were formulated early in the 20th century, when coal became an important source of fuel to power steam-driven locomotives and for generation of electricity across the west. These uses led first to localized underground mining of thick coal beds at shallow depths and later to widespread strip mining, particularly from the 1970s onward, as demand for low-sulfur coal for power generation greatly increased. More recently, coal beds themselves have become a valuable source of natural gas, as mentioned previously. This expansion in coal utilization has required an increasing degree of detail in the characterization and delineation of the principal coal-bearing units, as well as a need for a standardized nomenclature for individual coal beds, to facilitate basinwide correlations and resource assessments. Accordingly, efforts to meet these requirements are reflected in the varying approaches and goals of the many investigations that have been conducted in the PRB over the years. The overall trend has been to provide an increasingly more detailed stratigraphic framework and a better understanding of the depositional framework and facies distribution patterns for the coal-bearing strata, all of which is accomplished through the availability and use of an ever-growing geologic dataset.

During the early 20th century, locally thick coal beds were being mined underground in three important coalfields along the margins of the PRB: (1) the Sheridan coalfield, the oldest, containing three coal beds named the Dietz 1, 2, and 3, by Taff (1909); (2) the Gillette coalfield, containing the coal bed later named Wyodak by Mapel (1973); and (3) the Glenrock coalfield, containing an unnamed coal bed. Early studies, by USGS geologists in these mines and surrounding areas, contributed descriptions of stratigraphic sections and detailed maps of the coal-bearing strata (generally on quadrangle map bases), including the correlation and naming of individual coal beds (Shaw, 1909; Davis, 1912; Wegemann, 1912; Wegemann and others, 1928; Dobbin and Barnett, 1928; Baker, 1929). An important result of these local investigations, including those later by Olive (1957) and Mapel (1958), was the recognition of the lateral and vertical splitting and merging of the thick

minable coal beds, which negated many of the earliest concepts regarding their regional continuity and stratigraphic relations.

Regional (1° × ½° quadrangles; scale 1:100,000) investigations of minable coal beds using deep subsurface oil and gas geophysical logs and shallow coal drillhole logs were completed during the late 1900s (Culbertson and others, 1979; Kent and others, 1980; Hardie and Van Gosen, 1986; Culbertson, 1987). In these studies, splitting of coal beds was commonly observed, leading to the assignment of many new names by various workers. For example, attempts to correlate thick coal beds across the PRB, such as the Dietz, Wyodak, School, and Badger coals using coal drillhole and exploratory oil and gas well data, were made by Molnia and Pierce (1992) and McLellan (1992). However, these studies were hampered by insufficient subsurface data for accurate correlations, which led to a confused state of coal-bed nomenclature, resulting in large part from (1) correlation of coal beds named in Montana to coal beds tens of miles away in Wyoming, (2) formalizing names of coal beds that split and merge both locally and regionally, and (3) using derivative names of coal-bed splits. Because of the existing uncertainties in the correlation of individual thick coal beds, Flores and others (1999) suggested that coal resource estimates should be performed according to more readily correlatable coal-zone intervals, and this formed the basis for the assessment by Ellis and others (1999).

Among the more popular concepts applied to the coal stratigraphy in the PRB is that individual rock types, or "tabular rock bodies" such as coal beds and interbedded clastic rocks, occur in one or more specific patterns that can be related to one another, such as a thick coal bed in one part of the basin being the same as in another part, having accumulated in an uninterrupted, widespread swamp. This is exemplified by correlation of the thick Dietz coal beds in the Sheridan coalfield with the Wyodak coal bed in the Gillette coalfield by Glass (1976), who showed them to form a continuous tabular deposit across the PRB and redefined them as the "Wyodak-Anderson" coal zone, a usage continued by the Wyoming State Geological Survey (DeBruin and others, 2001; Surdam and others, 2007) and applied to other Fort Union and Wasatch coal beds in the PRB (Jones and Rodgers, 2007; Jones, 2008; Luppens and others, 2008). The concept of tabular-shaped coal beds has evolved with the collection of more surface stratigraphic data in conjunction with the mapping of coal beds and the collection of subsurface stratigraphic data with expanded coal mining, CBM, and oil and gas exploration in the PRB.

Early Mapping and Coal-Bed Nomenclature Problems

State-to-State Mapping Problems

Problems in the mapping of named coal beds from one area to another in the PRB arose when USGS geologists used Montana coal-bed names to identify Wyoming coal beds. The Cook coal bed of Bass (1932), Wall coal bed of Baker (1929), Pawnee coal bed of Warren (unpublished map, 1938) and Cache coal bed of Warren (1959), which had been identified in Montana within the drainage area of the Tongue River in northwestern PRB (wells 65 K to 100 K, fig. 15) were used to identify coal beds below the Canyon coal bed of Mapel (1973) in Wyoming. For example, Olive (1957) used the name Wall to identify a thick lowermost coal bed in outcrops along the Powder River at the Wyoming-Montana border in the northeastern PRB (fig. 1), where that bed joins the Cook coal bed of Bryson and Bass (1973) in the adjacent quadrangle in Montana.

The Montana coal-bed names of Cook, Wall, Pawnee, and Cache as used by McKay (1973), were renamed in Wyoming by Kent and others (1980) as the Werner, Gates, Kennedy, and Carson coal beds, respectively (well 1 J, fig. 14). However, the Montana names continue to be used and propagated by the CBM industry, Wyoming Oil and Gas Conservation Commission (WOGCC), and Wyoming State Geological Survey in the Wyoming part of the PRB (see table 1 on p. 33). Thus, many of these regional mapping and nomenclatural problems remain unresolved because use of Montana-named coal beds implies coal-bed correlations that have not yet been established in Wyoming.

Coal-Bed Splitting and Merging Problems

In the Wyoming part of the PRB, splitting and merging of coal beds also complicated local and regional mapping (Flores, 1979, 1981, 1986; Flores and Canavello, 1979; Kent and others, 1980). For example, the 125-ft-thick (38-m) Wyodak coal in the eastern PRB (Gillette coal district) is split into upper and lower Wyodak beds (well 6 I, fig. 13) (Mapel, 1973). The upper Wyodak is split, in descending order, into the Smith and Anderson, and the lower Wyodak is split into the lower and upper Canyon beds (well 19 I, fig. 13), with the latter renamed Werner by Kent and others (1980). Commonly, there are no coal beds between the Anderson and Canyon, but if present they either occur locally or are recognized as splits of the principal beds. For example, the Swartz coal bed of McKay and Mapel (1973) is a split from the upper Wyodak that pinches out locally between the Smith and Anderson coal beds.

The coal-bed splits of the Wyodak were interpreted to be equivalent to the 150 to 200-ft-thick (46 to 61-m) Big George coal in the west-central part of the PRB (well 89 H, fig. 12; Kent, 1986) and the 186-ft-thick (57-m) Sussex coal in the west-southwest part (well 64 B, fig. 5) (Hardie and Van Gosen, 1986). The Big George and Sussex coal beds also split into as many as six beds, making it unwieldy for establishing a formal nomenclature system. The reverse is also true, where these kinds of beds (for example, Wyodak, Big George, and Sussex) tend to merge locally as a thick, combined, single bed. The resulting correlation and nomenclature problems, in some cases, can be minimized by placing the principal coal beds and interburden rocks into a coal zone with finite upper and lower stratigraphic contacts. For example, the "Wyodak-Anderson" coal zone defined by Glass (1976) constitutes a unit, including

the Wyodak and split coal beds, which can be correlated with a high degree of certainty between the Sheridan and Gillette coalfields, thus avoiding unwieldy coal-bed nomenclature. In the example of the Sussex coal zone defined by Hardie and Van Gosen (1986) in the Kaycee 30' × 60' quadrangle area, however, the complex splitting and merging of coal beds has made it extremely difficult to map and name individual beds.

Derivative-Name Problems

Coal-bed splitting and merging is also common in the Sheridan area in the northwestern PRB where the 100-ft-thick (30-m) Dietz coal separates into three coal beds, in descending order the Dietz 1, Dietz 2, and Dietz 3 (well 105 K, fig. 15; Taff, 1909). Baker (1929) mapped these three coal beds about 30 mi (48 km) to the north into Montana where he erroneously correlated the Dietz 1 with the Anderson coal bed in the Decker area (fig. 1). Thus, the names Dietz 1 and Dietz 2 have been applied to the two coal beds underlying the misnamed Anderson coal bed, probably correlating to the Dietz 2 and 3 of Taff (1909). These Dietz coal beds merge in the Decker area and split eastward (wells 70 L–85 L, fig. 16).

In the eastern part of the PRB, Olive (1957) used the name Dietz and its derivatives (Dietz 1, 2, and 3) to identify coal beds between the Anderson and Canyon coal beds. McKay and Mapel (1973) identified the first bed below the Anderson as representing a Dietz bed, but referred to the next bed below it as the Canyon coal bed. This coal bed was named Swartz by McKay and Mapel (1973) (wells 123–124 N, fig. 18) because of its local nature.

Availability of Data and Data Control-Point Spacing

Ongoing studies will require stratigraphic correlations of the coal and related strata be made over short distances, from within a mile to possibly a few miles, to update estimations of coal reserves.

The work by Warwick and Stanton (1986), using coal-mine drillhole data, demonstrated the value of closely spaced subsurface data in interpreting the thick Wyodak coal beds to be isolated bodies, <1–3 mi (<1.6–4.8 km) in length separated by “want” or channelized deposits of clastic sediments. These coal bodies range from 1 to 9 mi^2 (5,760 acres) in areal extent, indicating that studies to define the limits of these coal bodies require control data points spaced only 0.25–0.50 mi (0.4–0.8 km) apart. In larger mine areas, the lease boundaries are delineated by the “want” deposits (for example, between the “North and Middle Groups” (BLM’s informal name) of coal mines in the Gillette coalfield) and splitting of coal beds (for example, between the “Middle and South Groups” (BLM’s informal name) of coal areas of the Gillette coalfield in the Hilight area). Thus, these features serve to compartmentalize minable coal bodies, which in the case of the Gillette coalfield, has resulted in the natural partitioning of as many as 14 surface mines extracting coal beds of the Wyodak coal zone (Flores and others, 1999).

These examples highlight the critical need for a data control-point spacing that is sufficient to: (1) accurately map and characterize coal-bed horizontal and vertical variability, which has been demonstrated to be highly complex both locally and regionally; and (2) correlate individual coal beds (and zones), also both locally and regionally, with a high degree of confidence. The spacing of wells drilled for oil and gas and for coal exploration prior to the advent of CBM development was insufficient to satisfactorily meet these objectives in many parts of the PRB, but they can be achieved in large measure by the great density of CBM wells that now exist, as shown by the detailed stratigraphic cross sections accompanying this report.

Where there is a relatively wide spacing of data points, control can be established only for the more persistent rock units, so precision in correlation of less persistent coal beds is thereby diminished. An example that demonstrates the need for closely spaced control for a detailed representation of the variability in coal-bearing strata is that of the Fort Union Formation, which is exposed for long stretches along the Powder and Tongue Rivers. From 1978 to 1988 more than 1,000 stratigraphic sections were measured and described by the author and associated graduate students. The spacing between sections ranged from as little as 0.25 mi (0.4 km) to as much as 1–2 mi (1.6–3.2 km), as was dictated by the rapidity and nature of the changes that could be observed to be taking place along the outcrop belt (Flores, 1979).

Depositional Environments and Facies of Coal-Bearing Strata

Lateral continuity, distribution, and thickness of coal beds and of juxtaposed and interbedded clastic rocks reflect the depositional processes and environments related to their accumulation. Ferm and others (1979) proved that coal beds that formed in swamps on delta plains are more laterally extensive than coal beds formed in swamps on alluvial plains. In addition, there are greater lateral and vertical variations in coal beds and adjoining rock units deposited on alluvial plains. In those settings, allocyclic processes such as responses to migration, abandonment, and shift of river channels to low-lying areas (for example, outlying swamps) produce changes in the stratigraphic and sedimentologic patterns of coal-bearing rocks.

Superposed on changes in the stratigraphy and depositional facies resulting from allocyclic processes are those effects that arise from broad-scale tectonic or autocyclic influences contemporaneous to deposition as illustrated by Flores (1981, 1983, 1986, 2003) in the PRB. The work by Sholes and Daniel (1992) on the Fort Union Formation in the Montana part of the PRB demonstrated that subsurface data provided by geophysical logs

(for example, gamma ray, resistivity, and density) could be used to determine sedimentologic facies and interpretation of depositional environments (for example, fluvial channel sandstones) critical for the correlation of coal beds.

The differential rate of subsidence from east to west in the PRB produced pronounced effects with respect to thickness of sedimentary sequences and depositional environments. In the more rapidly subsiding western part of the basin, caused by the rapid rate of tectonic uplift of the adjacent Bighorn Mountains, the Fort Union Formation is 5,200-ft (1,585-m) thick, whereas in the more stable and less deep eastern part of the basin it is 2,000-ft (610-m) thick.

Most importantly, the allocyclic and autocyclic processes controlled the lateral continuity of coal beds in the PRB, which resulted in a high order of splitting and merging of coal beds and limited lateral continuity of interbedded sandstones and finer grained sediments in alluvial facies (Ferm and Cavaroc, 1968). In alluvial or fluvial settings, river channels are filled with sand and subsequently are abandoned owing to lateral shift and migration of the channels into areas with low gradients in which fine-grained sediments are deposited and (or) peat swamps form.

The local and regional tendencies of coal beds to split and merge complicate geologic mapping in the PRB, as demonstrated by M.S. and Ph.D. theses studies supervised in the field by the author from 1978–2003 (Canavello, 1980; Lynn, 1980; Pait, 1981; Toth, 1982; Coss, 1985; Warwick, 1985; Moore, 1986; Whipkey, 1988; Walko, 2003). These studies readily document that coal splitting is caused by sandstones and associated finer grained sediments deposited in fluvial channels, crevasse splays, and distal floodplains, which periodically intruded the adjoining swamps or bogs. Fine-grained sediments such as clay and mud invade open-water bogs from adjoining channels during floods, and then become a parting after peat deposits accumulate from decayed vegetation on top of the flood deposits. Thus, a split originates as a parting in coal and laterally grades into coarser grained sediments such as siltstones and sandstones. The lateral and vertical variations of these depositional facies serve as a good guide to the splitting and merging of coal beds. These phenomena are best illustrated by the common splitting of coal beds toward the rapidly subsiding basin center (Flores, 1986; Kent, 1986; Hardie and Van Gosen, 1986; Sholes and Daniel, 1992) influenced by accommodation space.

Computerized Modeling

When compiling the data for this report, it became apparent that in order to facilitate geological modeling and assimilation of the huge CBM database, only computerized modeling offered the means to do so. For this purpose, ArcScene 8.3 (ESRI, 2009), Adobe Photoshop CS4 (Adobe, 2009), Adobe Illustrator CS4 (Adobe, 2009), Microsoft Internet Explorer 7 (Microsoft, 2009), and Microsoft Access 2007 (Microsoft, 2009) software were utilized. Data from CBM wells, specifically gamma ray, density, and resistivity logs and related digital data, were downloaded from the Wyoming Oil and Gas Conservation Commission (WOGCC) web site using Microsoft Internet Explorer 7. All of these geophysical logs are TIFF images; thus, necessary adjustments to the images were made in Adobe Photoshop CS4 (for example, size reduction, gray scale, and square pixels). In most cases, the log curves were re-digitized to enhance their clarity, especially for recognizing coal and sandstone reflections.

Microsoft Access 2007 was used for database creation. After a small amount of data processing in Access, the database was imported into ArcInfo where the locations of the wells were determined, verified, and displayed. ArcInfo 8.3 was used to map and display CBM data, and to identify lithologies for construction of regional cross sections. The images were then imported into Adobe Illustrator CS4 based on location, positioned with respect to a baseline as determined by the overall average elevation in the area, and spaced according to true well distances along the lines of cross section. Hard copies of the cross sections were printed and recognizable coal and channel sandstone beds were correlated using depositional facies interpretation. That is, the splitting, merging, and pinching out of coal beds were determined by the presence and (or) absence of channel sandstones and by the depositional and differential compaction of sandstones versus finer grained sediments, as could be interpreted from the basin structure contour map and presence or absence of faults and folds. Hard copies showing the traces of correlated coal and sandstone beds were digitized and overlain onto the digital files of the cross sections. The files were finalized for illustration in Adobe Illustrator CS4 and text was added.

A separate WOGCC (2009) dataset containing depths of tops and bases of the gas-producing coal beds was used to create surfaces (grids). The surfaces were used in ArcScene (3D viewer) (ESRI, 2009) to estimate the depth, thickness, and dip of the producing coal reservoirs. This computer modeling produces three-dimensional views, which assist in the basin-wide mapping of the coal beds.

The modeling was done in Adobe Illustrator CS4 and GIS-based software using mostly geophysical logs of CBM wells from the WOGCC (2009) website. These logs were digitized at the same scale, arranged according to actual well spacings, and plotted with respect to a sea level datum using Adobe Illustrator CS4. The coal and sandstone beds were identified in each digitized log by their reflection on gamma ray and resistivity curves. Only sandstones greater than 10-ft thick (3-m) were considered by Flores and others (1982) to represent the normal thickness of channel sandstones in outcrops, and this was used as a minimum thickness to identify such sandstones on coal drillhole logs. Coal-bed correlations were performed manually, based on these criteria and taking into consideration the subsurface structural relations as shown on a structure contour map (Curry, 1971; McGarry and Flores, 2004).

Correlations of coal beds and interbedded rocks were complicated in part by errors in the WOGCC (2009) CBM

database with respect to the postings of drillhole surface elevations, locations, and related depths of coal beds. These errors were discovered during coal- and sandstone-bed correlations, resulting in an exaggeration of coal-bed surface undulations thought to be caused by the differential compaction of the coal, sandstone, and finer grained clastic rocks (see photograph on cover page). The undulations took the form of chevron-like sharp folds interpreted to be faulted, which were found to actually be caused by recording errors of the surface elevations. The elevations were corrected using the survey plats and the USGS-published digital elevation model (DEM). The well-surface elevations were then calibrated to the DEM to apply a universal correction.

New Sources of CBM Data

Coalbed methane development during the past 20 years has largely met the need for closely spaced data control points in the PRB, as mentioned earlier. Digital copies of geophysical logs from CBM wells are routinely submitted by gas operators to the WOGCC, which collects, collates, and manages the logs and makes the data available to the public online. As of October 2009, more than 26,000 closely spaced CBM wells are available in the WOGCC database (WOGCC, 2009). These data considerably improve the precision with which coal beds can be correlated and enhance the interpretations of stratigraphy and depositional facies of the coal-bearing strata in the PRB. These data, compared to previous geophysical logs of oil and gas exploratory wells, include sets of geophysical logs (for example, gamma ray, density, and resistivity) that provide reliable means for identifying coal beds. These geophysical logs are also amenable to measuring unique properties of coal, including low, naturally occurring radioactivity, low density, and high resistance, in contrast to most other rocks in coal-bearing sequences. Thus, these logs provide information on the presence, lateral extent, thickness, and correlation of coal beds in areas not yet previously explored.

The WOGCC mandates spacing of CBM wells in the PRB, mostly one well per 80 acres, which is controlled by dewatering and degassing requirements of the gas operators. This necessitates drilling wells spaced less than 0.5 mi (0.8 km) apart. Limited areas, mostly near coal mines in Campbell County, contain one well per 40 acres. These areas contain 16 wells per square mile with wells spaced 0.25 mi (0.4 km) apart. This close spatial distribution of the CBM wells permits interpreting the lateral continuity of the coal beds with a high degree of confidence, hence a better understanding of the pattern of lithic variations.

Geophysical logs of the CBM wells were calibrated based on studies of cores and outcrops of the Fort Union Formation by Flores and others (1982) along the Powder River. In this area, descriptions of surface sections and of cores of coal drillholes situated 50–200 ft (15–60 m) apart were combined to determine the sequence and types of depositional facies that are present, which could then be used as guides to identify similar units in wells on the basis of gamma ray, density, and resistivity log signatures. After comparison of the depositional facies between outcrops and the cores of drillholes as much as 2–3 mi (3.2–4.8 km) apart, it became readily apparent that, except for some of the coal and channel-sandstone beds, other rock types were so variable laterally that it would take at the least a 0.5-mi (0.8-km) spacing, such as that provided by the CBM wells, to accurately correlate the depositional facies.

Geophysical logs from oil and gas exploratory and developmental wells, where available, supplemented the data from the shallow CBM wells. In particular, that information was used for deeper stratigraphic horizons critical to the discovery and correlation of coal beds below depths of CBM production, and it extended information to some parts of the PRB where there were no CBM wells (fig. 1).

Revised Basinwide Coal Stratigraphy and Nomenclature

In order to establish regional coal stratigraphy and correlations in the PRB, it was essential to (1) study lithic patterns along a closely spaced network of east-west and north-south lines of cross sections originating from type localities or reference sections of coal beds identified by USGS geologists; (2) map coal beds prior to assigning names derived from the USGS type localities or reference sections; (3) differentiate thick principal coal beds from those that either locally merge or are splits of the principal beds; (4) identify splitting, merging, and pinching out of coal beds by depositional facies, particularly identifying and interpreting the trends of coal partings, fluvial channel sandstones, and interbedded finer grained sediments; (5) differentiate compactional folds from structural folds; (6) distinguish faults from depositional slumps; and (7) correlate beds using the trend of general structural dip of the basin with the stratigraphic sections of the wells drawn with respect to sea-level elevations.

Depositional Concept of Coal Splitting in the Powder River Basin

Possibly the most important special features used for correlation in the PRB are trends of depositional facies, depositional strike, and depositional shifts, which control the directions of splitting, merging, elongation, and thickening of coal bodies. Many workers in the PRB have long recognized the depositional patterns of fluvial channel sandstones in the splitting of coal beds in the Fort Union and Wasatch Formations (Flores and Canavello, 1979; Flores, 1986; Hardie and Van Gosen, 1986; Kent, 1986; Moore, 1986; Warwick and Flores, 1987; Goolsby and Finley, 2000). For example, the en echelon trend of fluvial channel sandstones recognized by Hardie and Van Gosen (1986) along the subsiding basin axis in the southwestern PRB probably resulted from the shift or migration of fluvial channels in response to favorable local gradients such as those in low-lying bogs where peat accumulated. The abandoned fluvial channel

sandstones eventually were covered by bogs that had migrated from outlying bogs, giving rise to local splitting and merging of the Sussex coal beds (see west end of cross section *B–B′*, fig. 5). Also, north-flowing channels alternately shifted from east to west, resulting in the accumulation of a merged Sussex coal bed that is elongated in a north-south direction but which, splits towards the west and east.

Splitting commonly occurs where a sedimentary layer (initially a rock parting that is thinner than the enclosing coals) between coal beds becomes thicker than the coals. The concept of coal splitting can be characterized as a progression of repeated lateral splits ranging from what is recognized as a 1st order split in the case of a coal bed with a rock parting that thickens laterally to cause separation into two beds, then to successively higher orders (2nd through possibly as many as the 7th) as these two are each split into two or more beds and so on (fig. 2). At any stage in this progression, the split coal beds can merge and then split again, depending on the depositional processes involved.

Thus, proper identification and lateral traceability of partings and splits are the key to stratigraphic correlations of coal beds. The lack of understanding of these principles is detrimental to accurate coal resource assessment (Luppens and others, 2008). More importantly, the coal-bed partings and splits are traceable toward point sources of detrital sediments such as fluvial and crevasse channels (Flores, 1986). During deposition of coal beds, the precursor peat bogs were transformed into low-lying, topogeneous areas where adjoining fluvial channels during flood events either overtopped or breached the banks to form crevasse splays and deposit detrital sediments. The farthest-reaching sediments into the peat bogs form a thin, fine-grained (mud, clay) detrital deposit that coarsens (silts, sands) and thickens toward the point source. The area of detrital sedimentation is reoccupied by the bog after the flood event as peat accumulation is gradually renewed, encroaching from the distal to the proximal areas of the sediment point sources, thus forming a 1st-order coal-bed split. Repetition of detrital flood depositional processes with reoccupation and accumulation of peat in the bog as the substrate subsided then results in 2nd and higher orders of coal-bed splits. During cyclical interruptions of these depositional processes, there may be local thinning, pinching out, and remerging of coal beds. Peat bogs are ultimately abandoned as the fluvial-channel point source migrates or shifts to an adjoining area, thus permitting reoccupation of the bog later.

Regional Cross-Section Lines

Thorough analysis of the 17 cross-section lines that are presented in this report (figs. 3, 4–20) shows complex stratigraphic trends, the interpretations of which differ significantly from many of those of previous investigators. The complexities in correlation resulting from the splitting, merging, and pinching out of numerous coal beds, as well as from differential compaction and fault displacement of the coal-bearing strata, increase most prominently in a westward direction toward the center and west margin of the PRB. Accordingly, basinwide correlations of coal beds are based primarily on east-to-west lines of cross section (figs. 4–17) starting near the eastern part of the basin where the coal beds, such as those of the Wyodak coal, were originally defined by Mapel (1973). The Wyodak coal-bed names recognized by the USGS in the reference locality of Mapel (1973) were adopted and extended through revised correlations across the basin, creating an amended coal-bed nomenclature system. Correspondingly, the coal beds below and above the Wyodak coal were re-correlated and renamed also using USGS names. The network of 17 cross sections (fig. 3) includes a total of 1,715 wells (figs. 4–20). Well numbers and names, American Petroleum Institute (API) point identifications, operators, State and County locations, and log types are listed in the Appendix with the related data in the Microsoft database (PRB_STRAT_DB.mdb) accompanying this report.

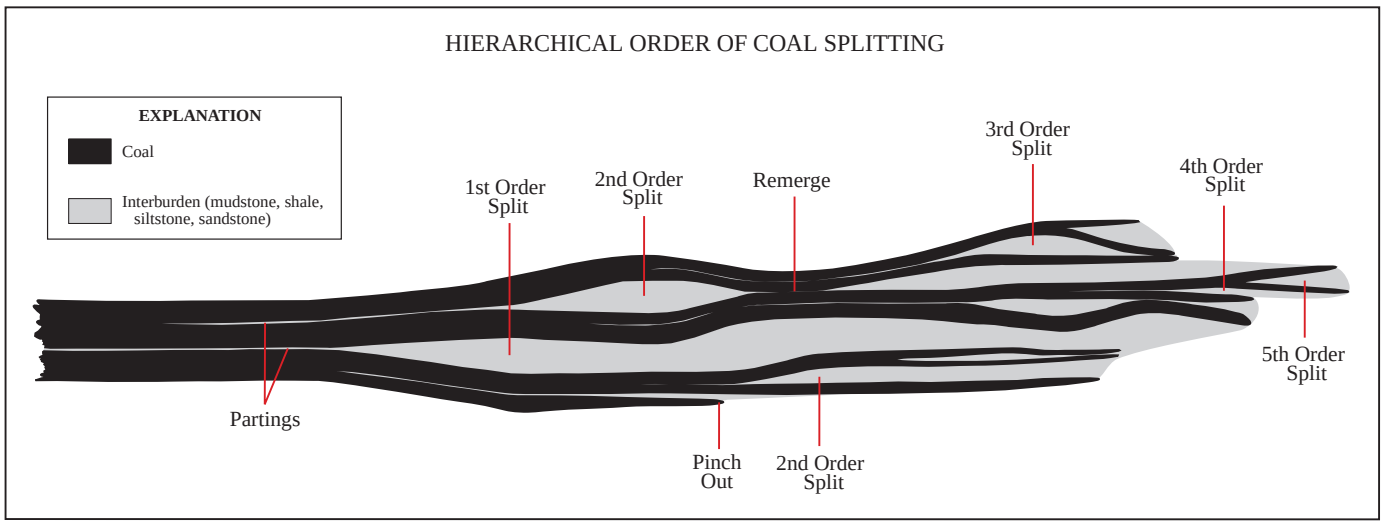

Figure 2. Diagram of hierarchical order of coal splitting that is typical of Fort Union and Wasatch coal beds.

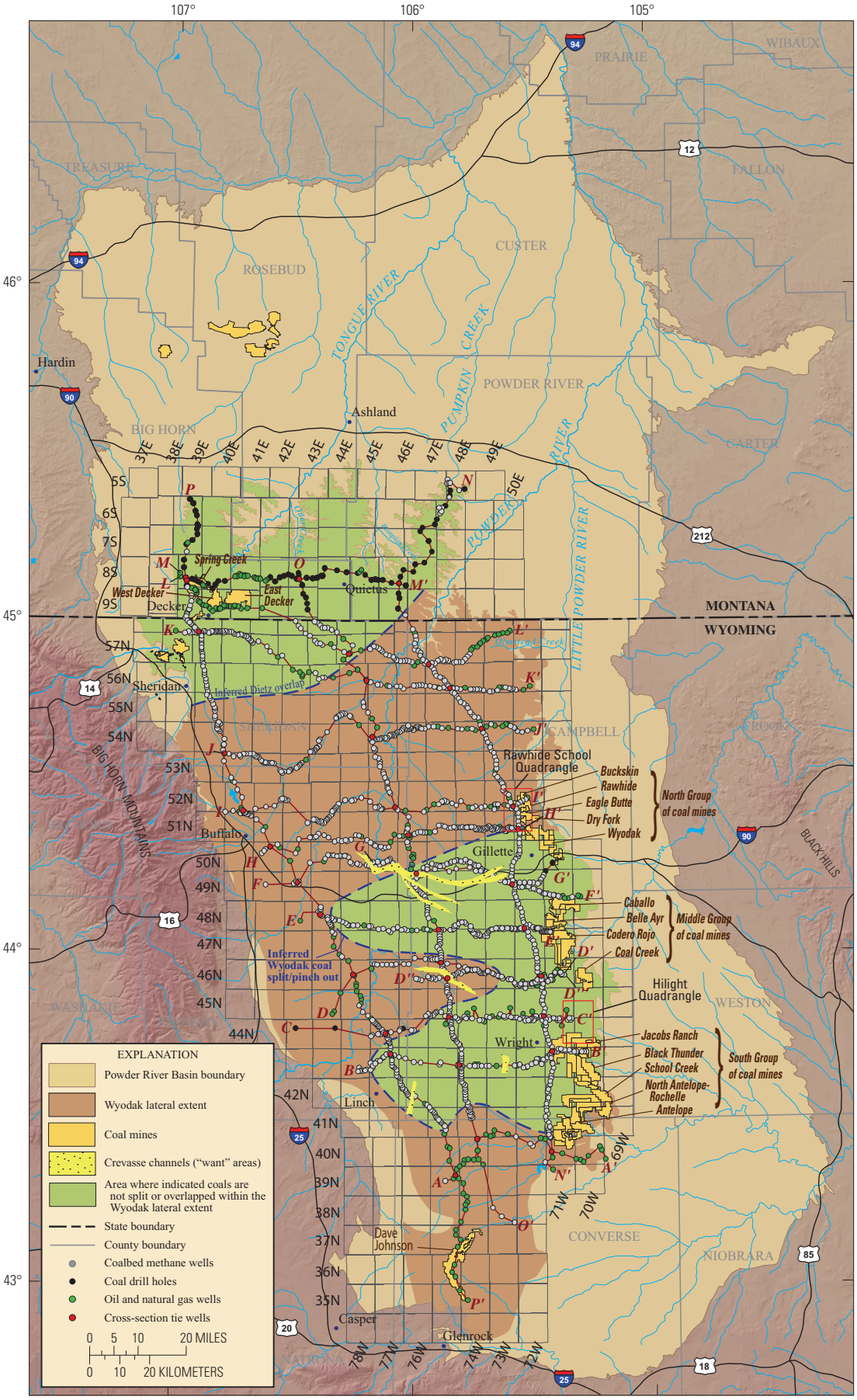

Figure 3. Map of the Powder River Basin in Wyoming and Montana showing locations of 17 regional lines of cross sections; the coalbed methane, oil and gas, and coal drillhole wells used to construct cross sections; areas where beds are not split or overlapped; locations of major channel sandstones; and coal mine areas.

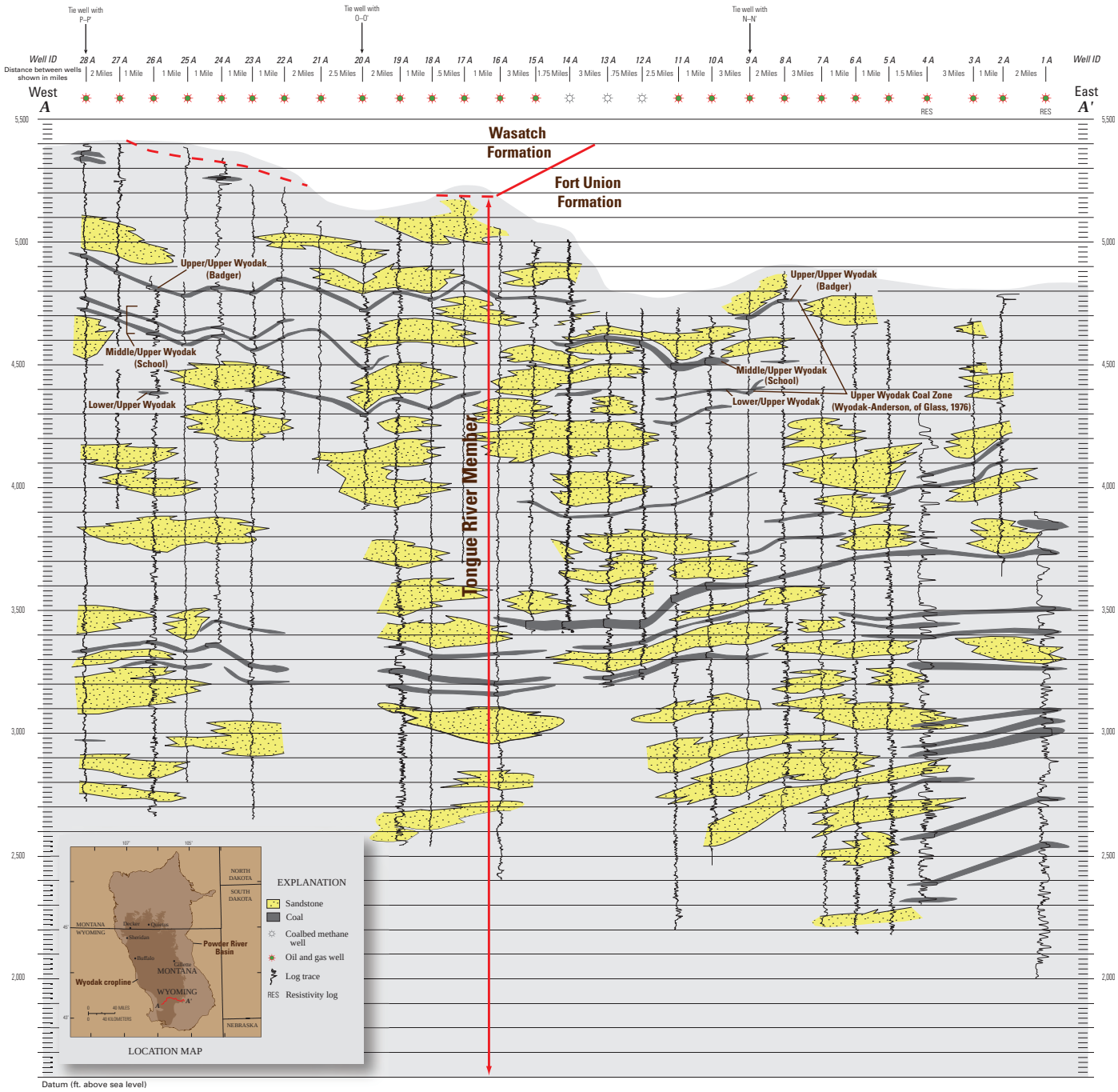

Figure 4. Cross section *A–A'* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southernmost part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

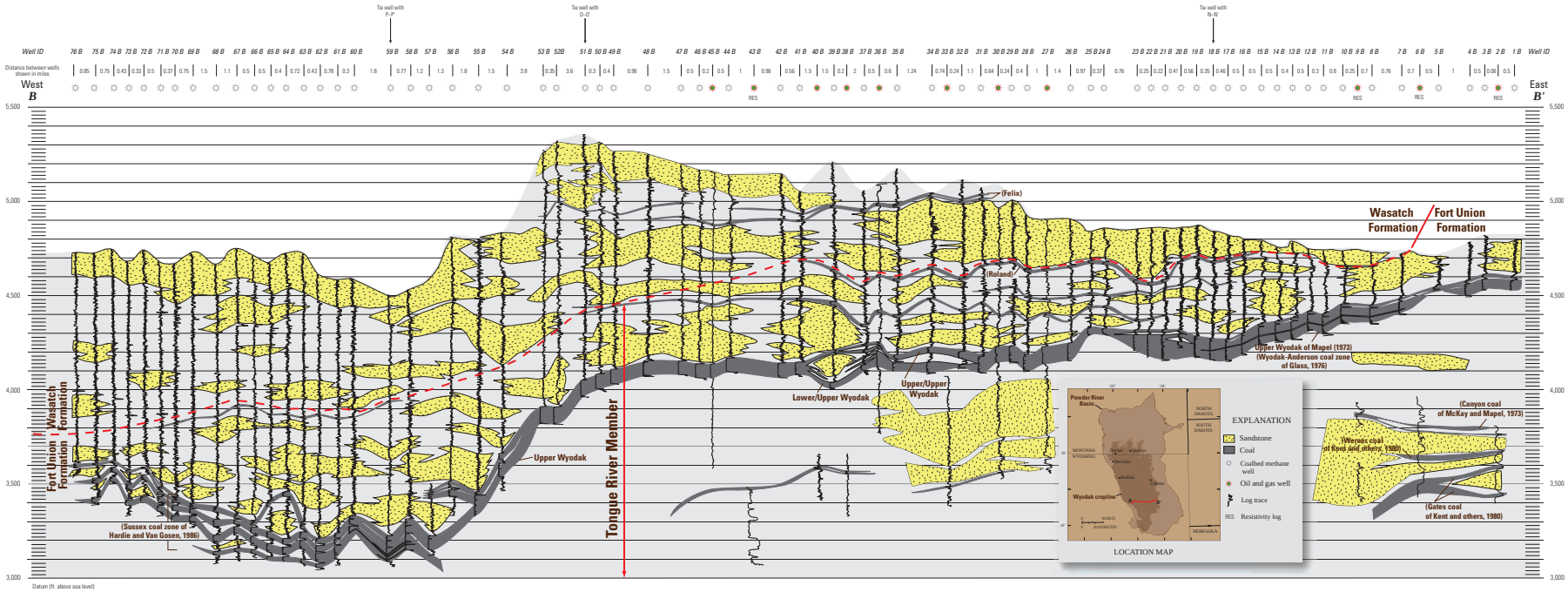

Figure 5. Cross section *B–B′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

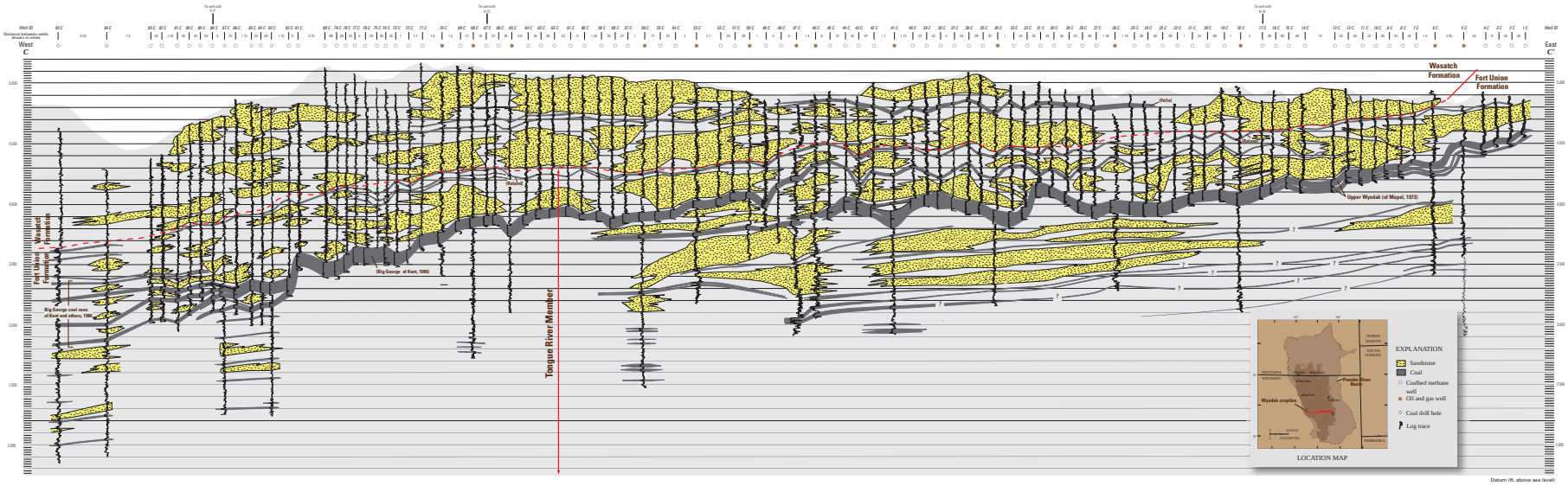

Figure 6. Cross section *C–C′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

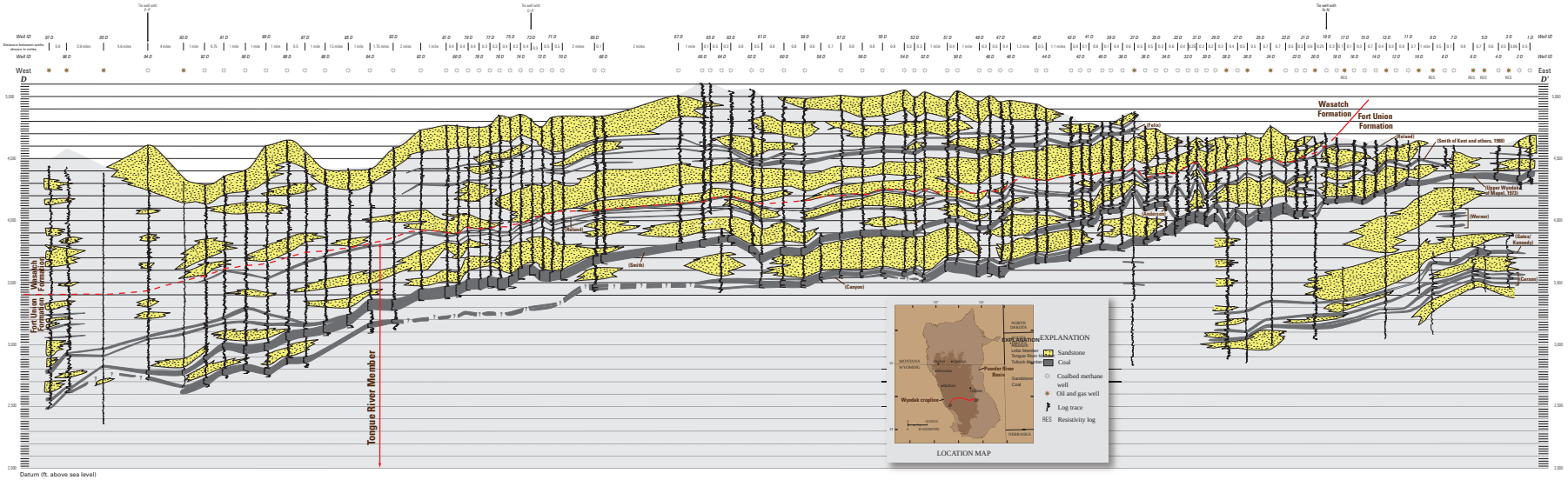

Figure 7. Cross section *D–D′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

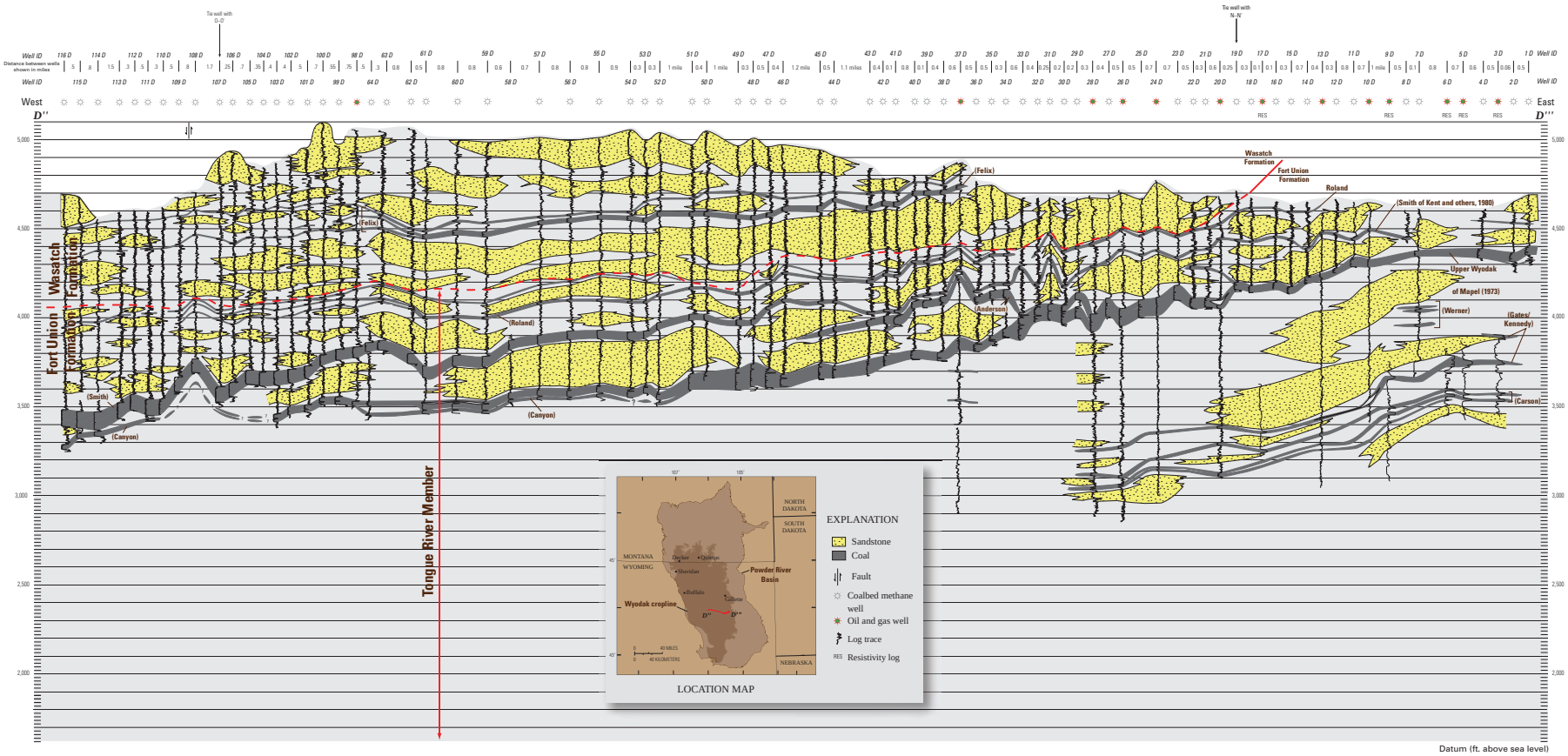

Figure 8. Cross section *D''–D'''* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

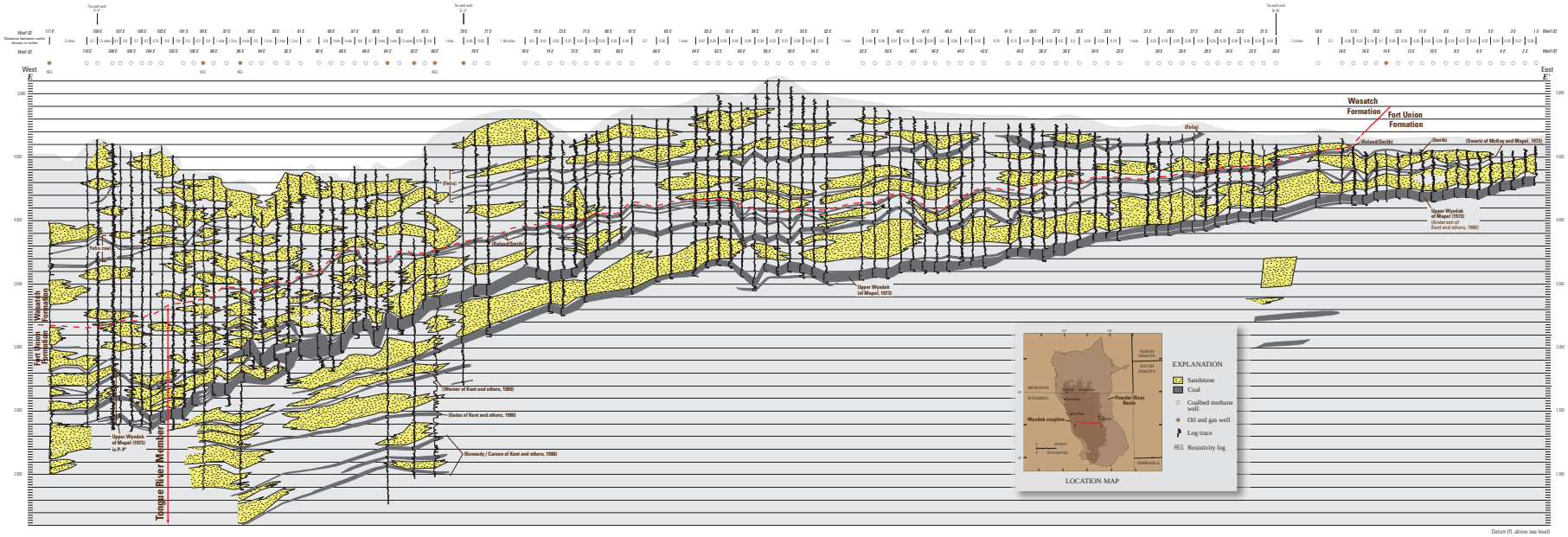

Figure 9. Cross section *E–E′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the southern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

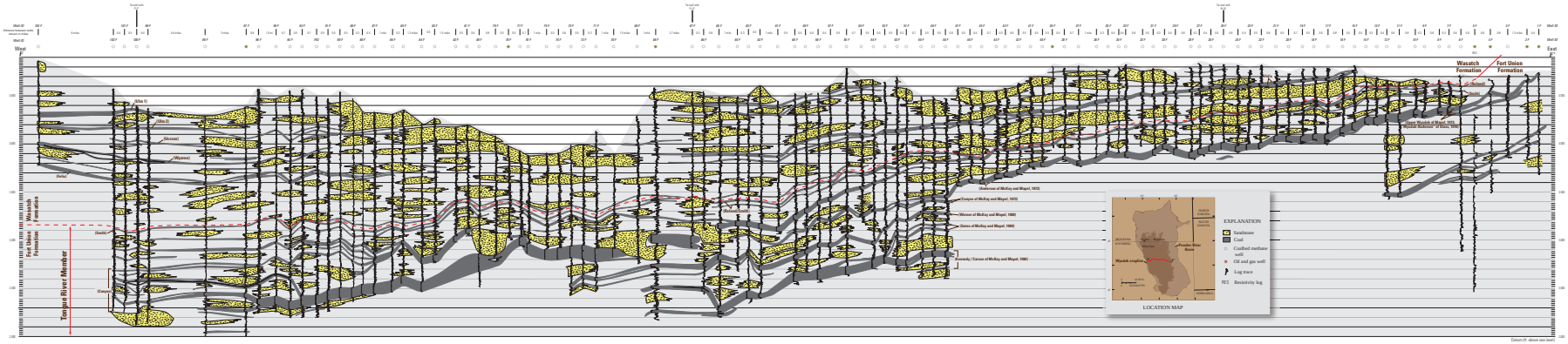

Figure 10. Cross section *F–F′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

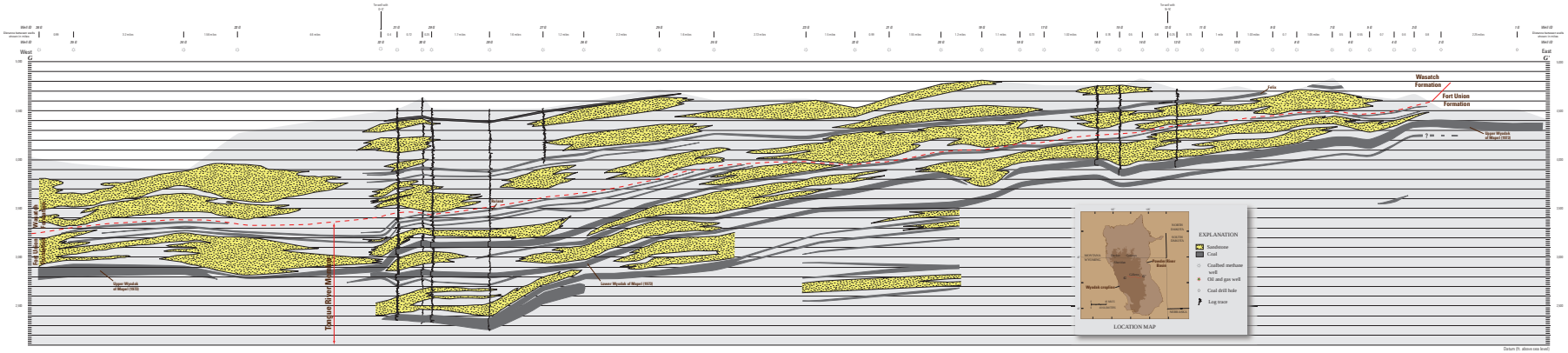

Figure 11. Cross section *G–G′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

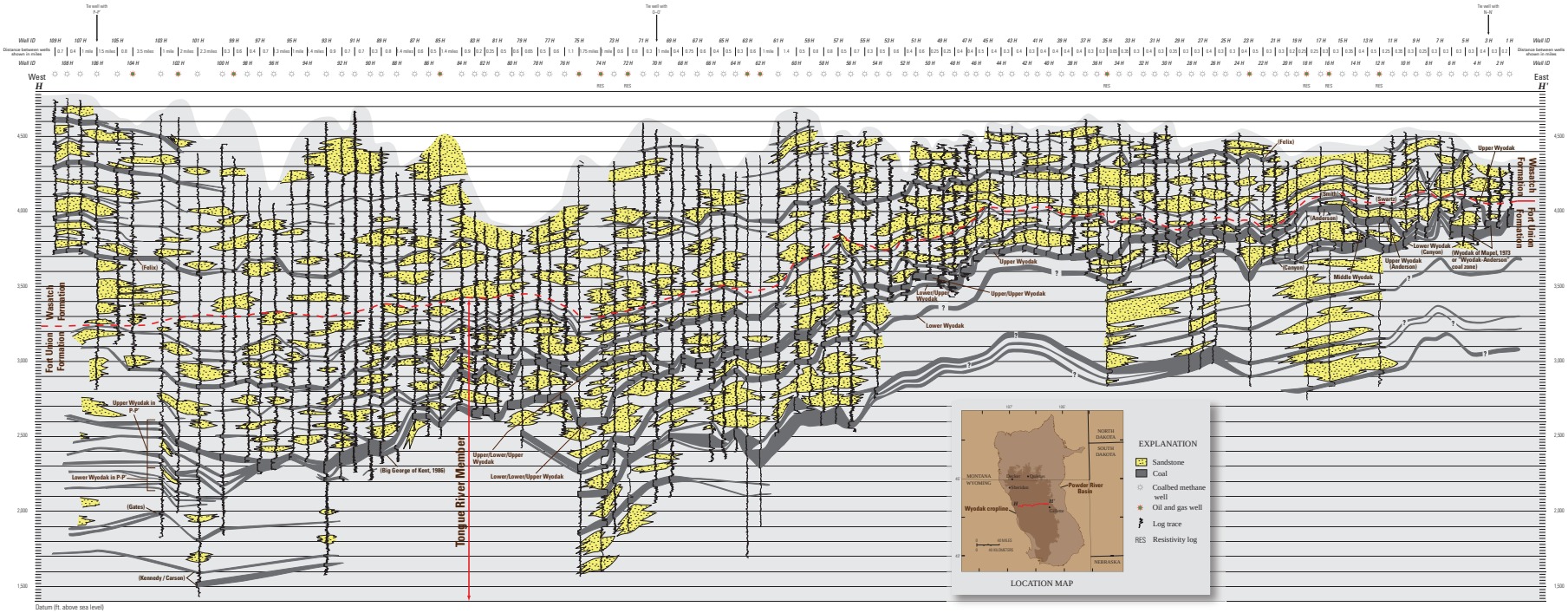

Figure 12. Cross section *H–H′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

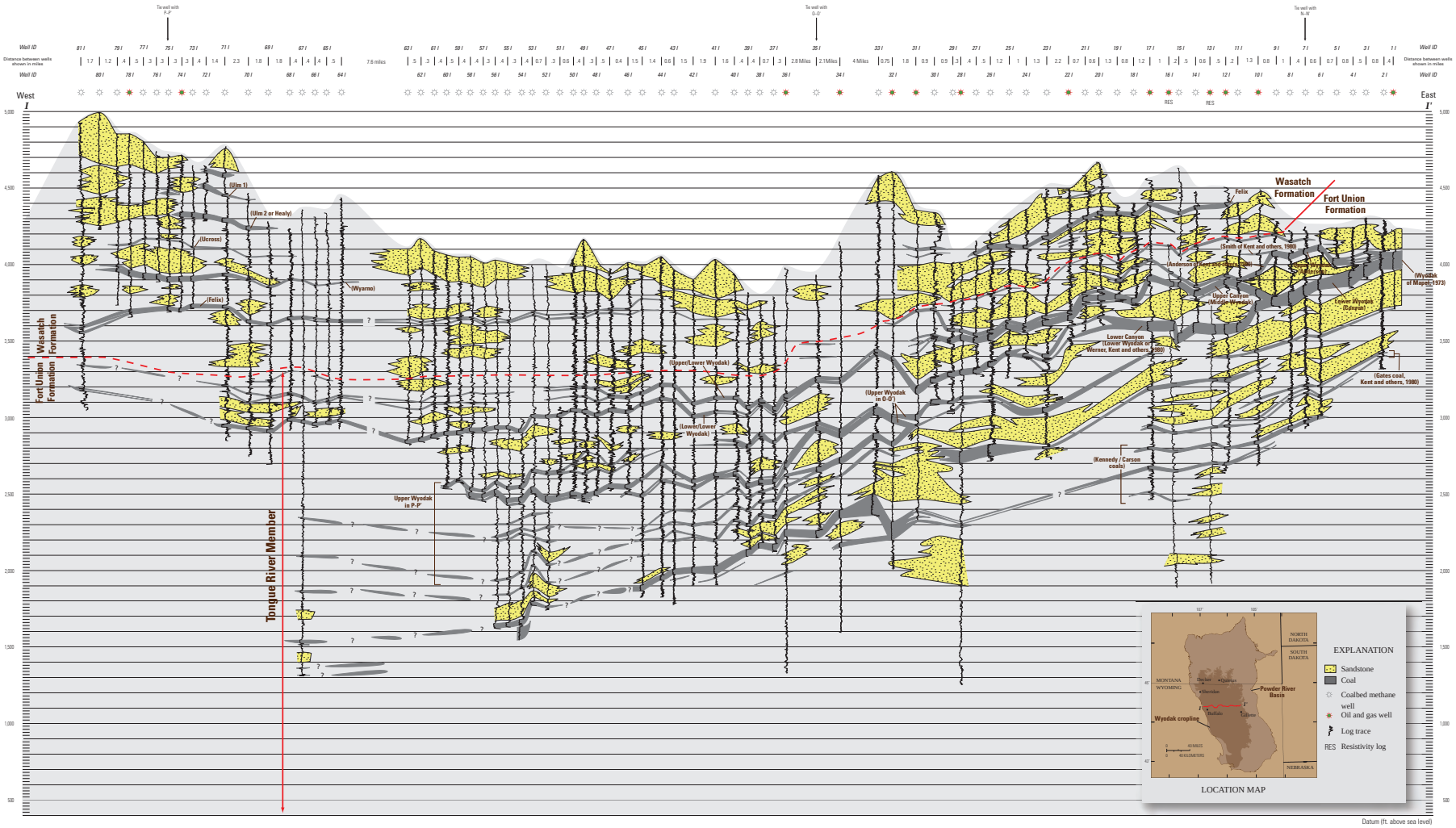

Figure 13. Cross section *I–I′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

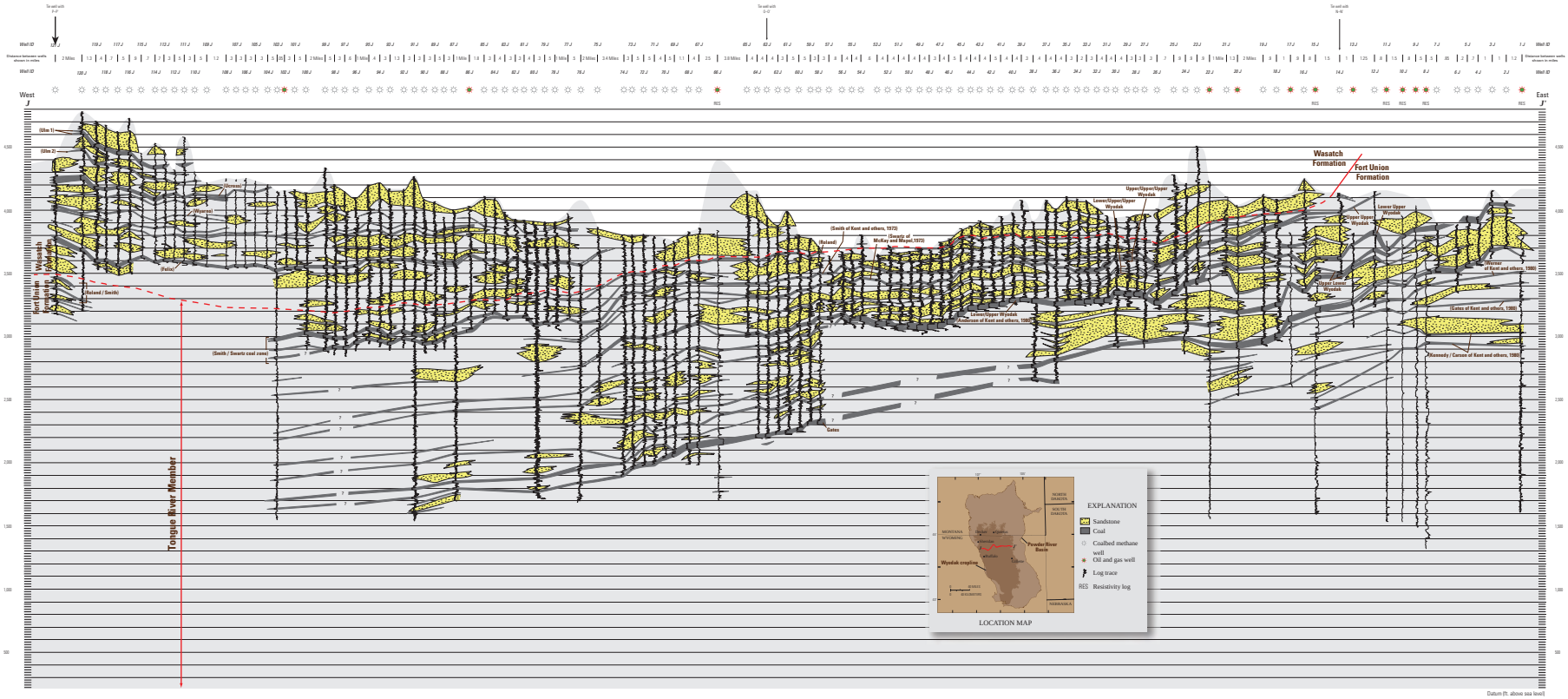

Figure 14. Cross section *J–J′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

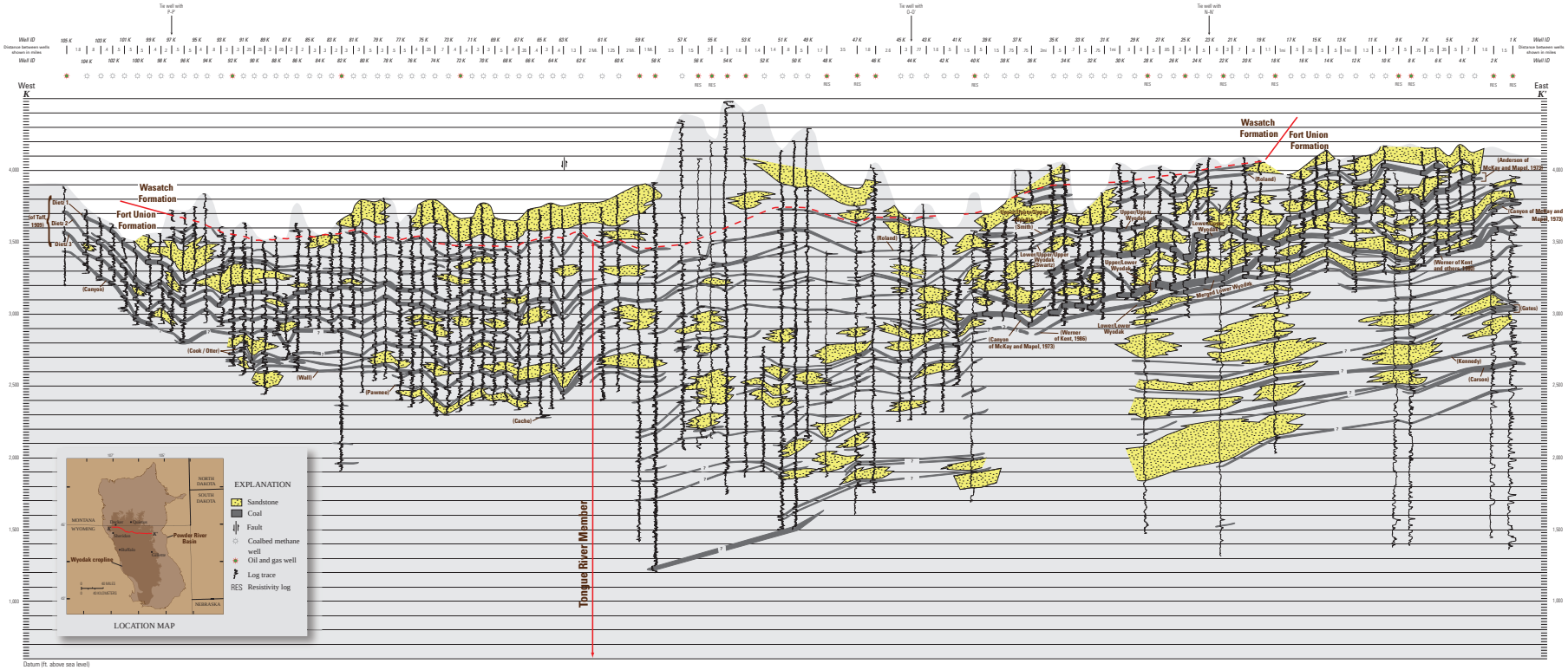

Figure 15. Cross section *K–K′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northern part of the Wyodak extent, Powder River Basin, Wyoming.

Click on figure to view at higher resolution.

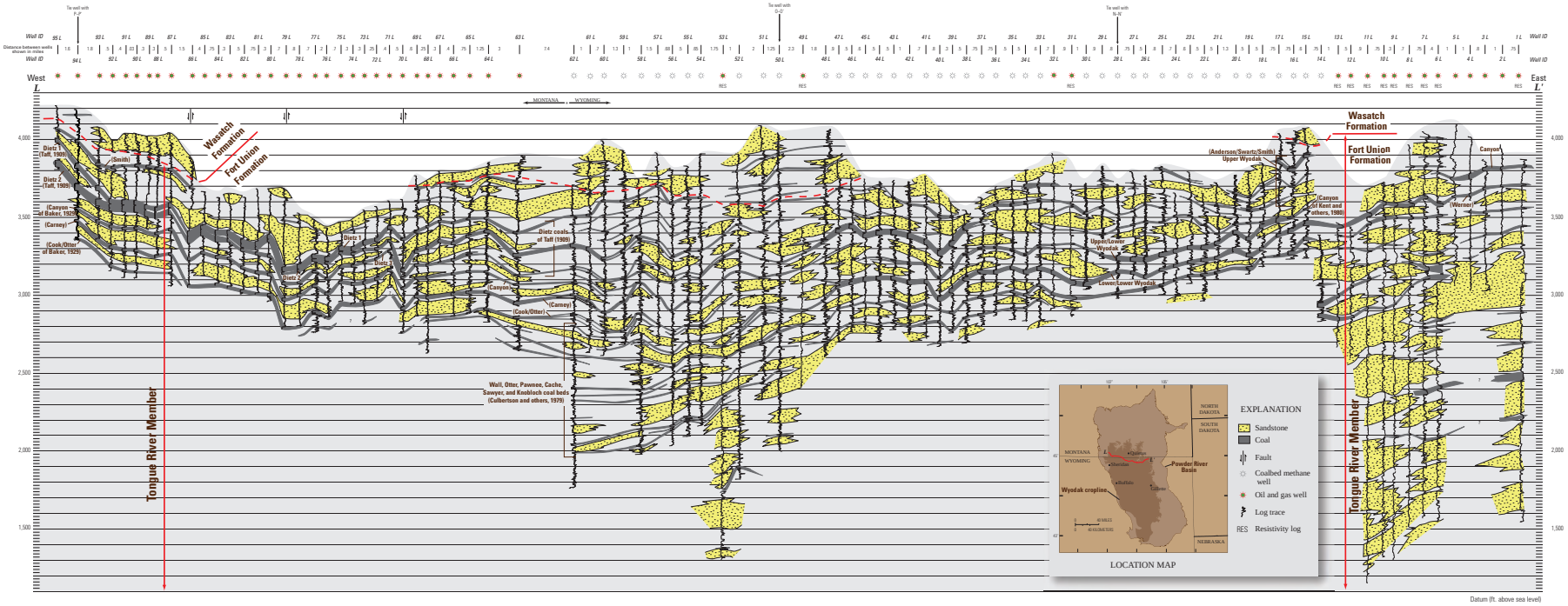

Figure 16. Cross section *L–L′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northernmost part of the Wyodak extent, Powder River Basin, Wyoming and Montana.

Click on figure to view at higher resolution.

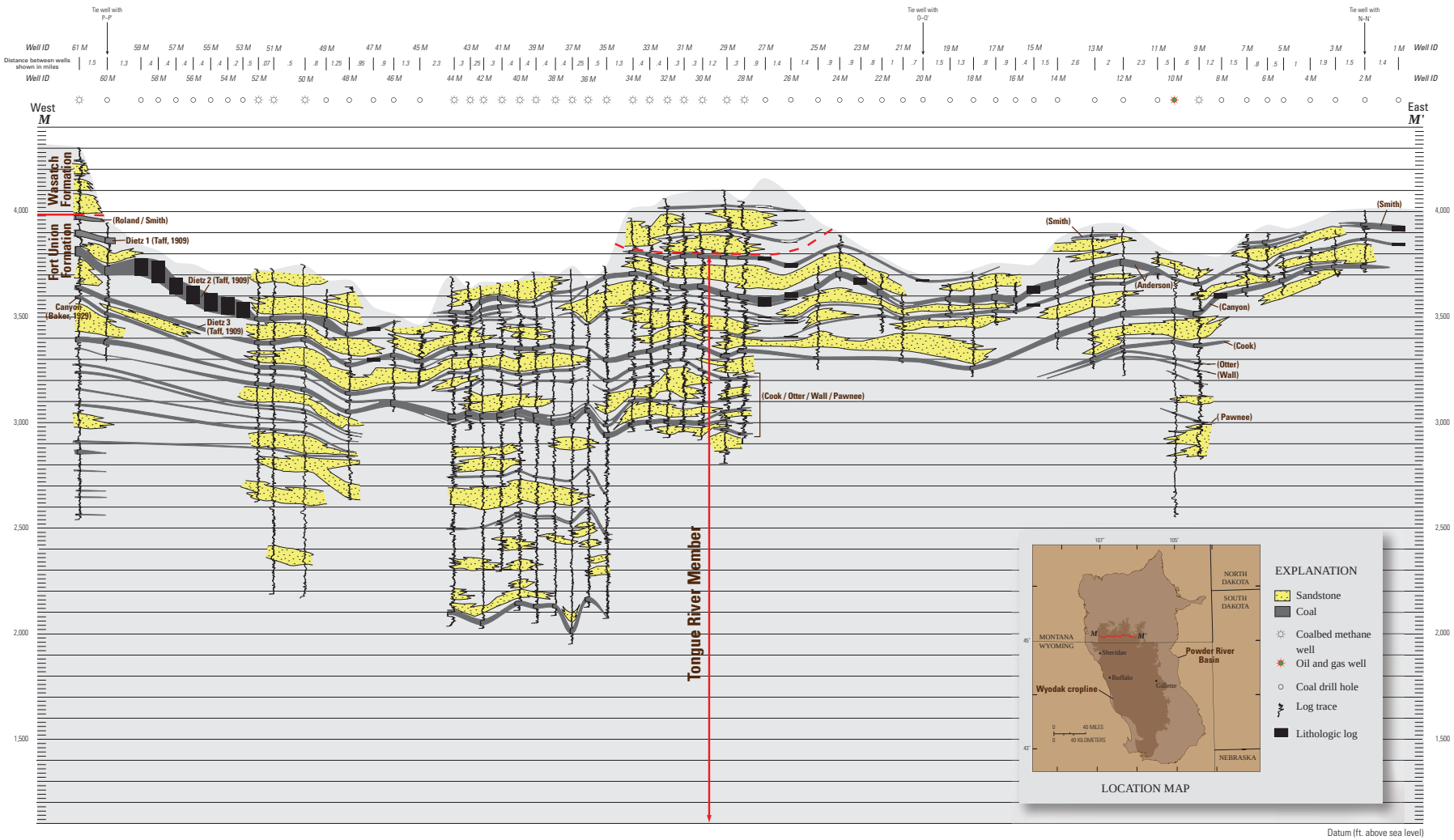

Figure 17. Cross section *M–M′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the northernmost part of the Wyodak extent, Powder River Basin, Montana.

Click on figure to view at higher resolution.

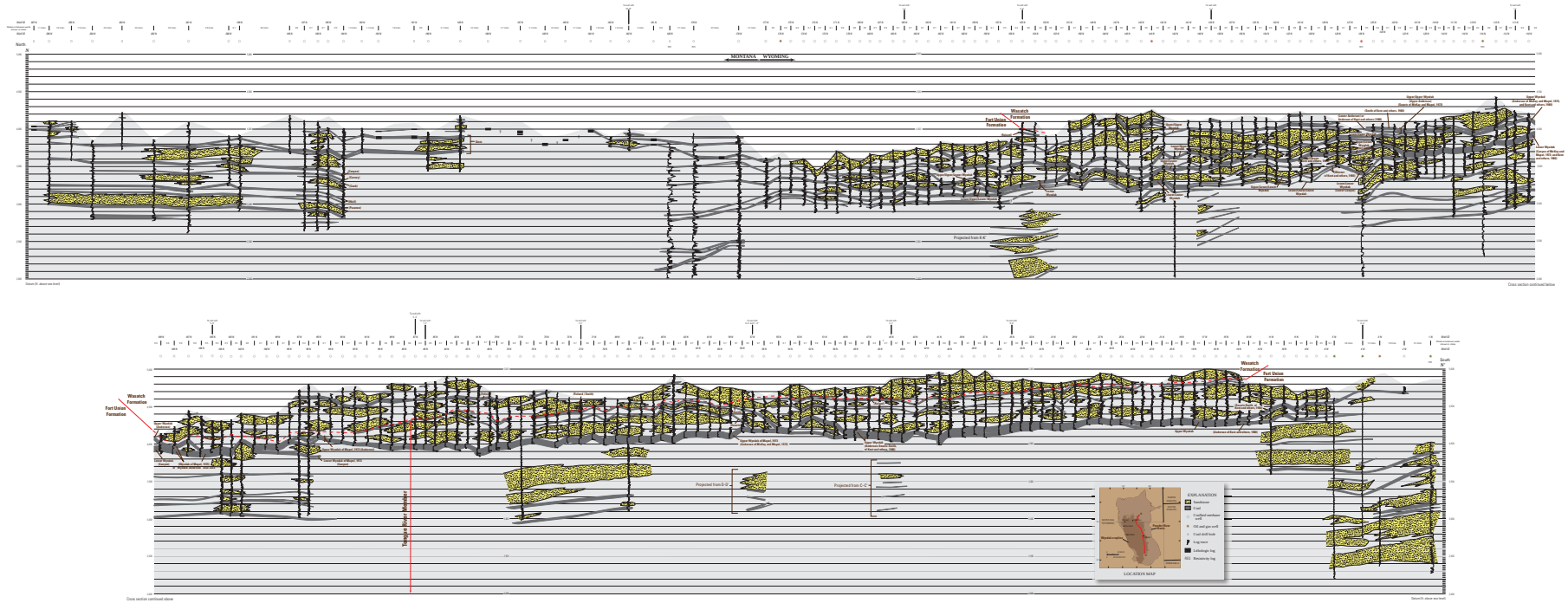

Figure 18. Cross section *N–N′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the eastern part of the Wyodak extent, Powder River Basin, Wyoming and Montana.

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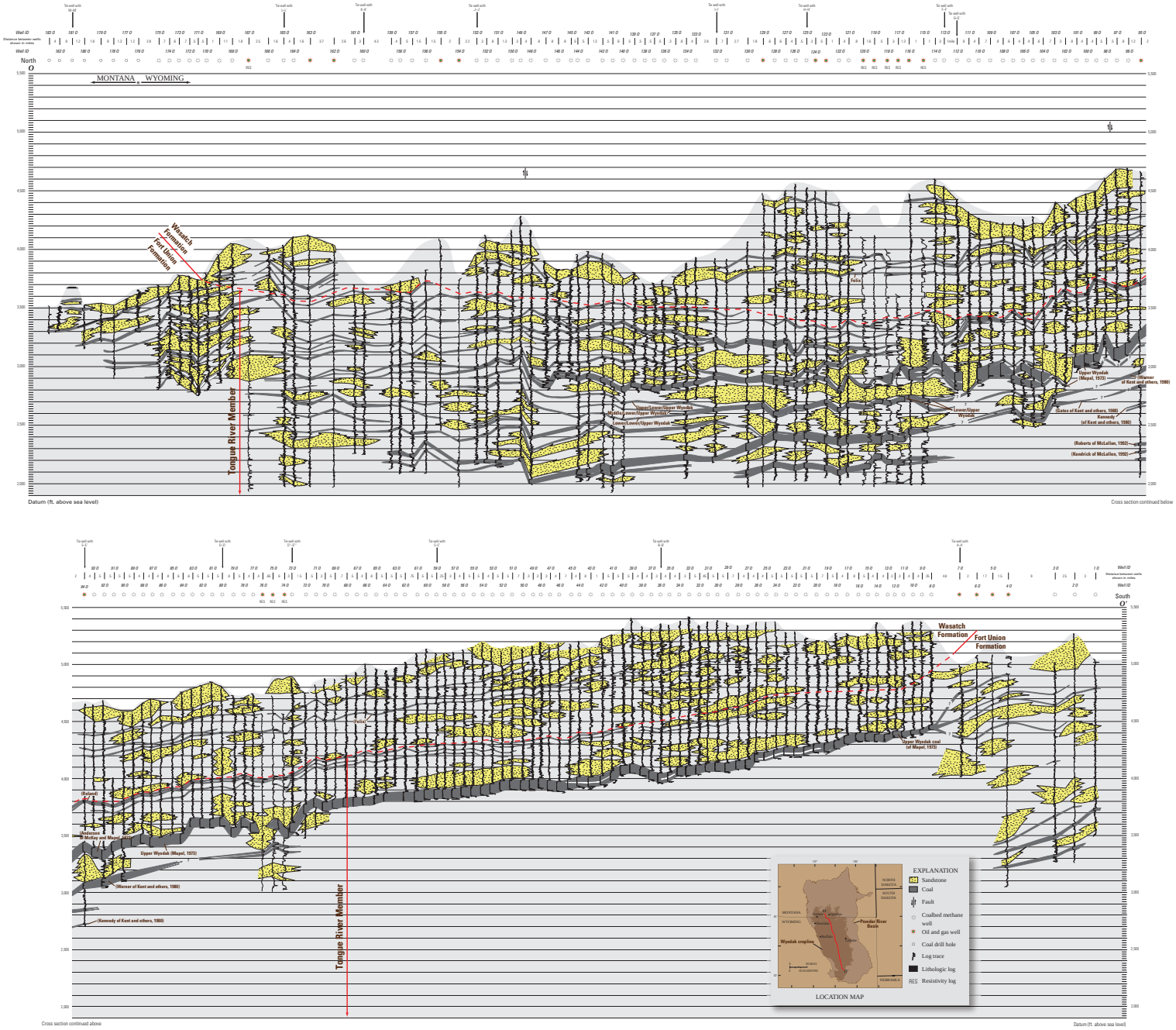

Figure 19. Cross section *O–O′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the central part of the Wyodak extent, Powder River Basin, Wyoming and Montana.

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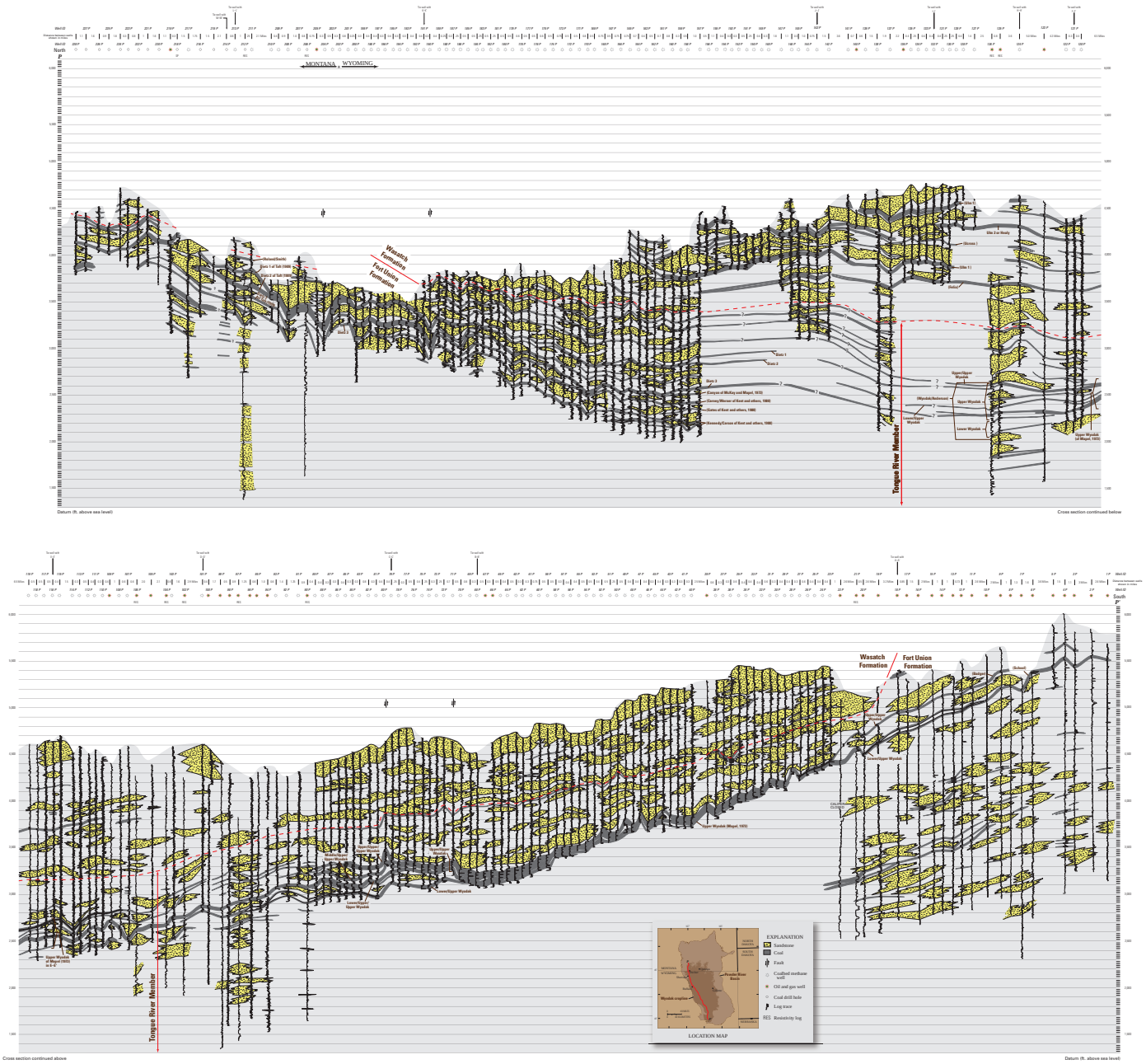


Figure 20. Cross section *P–P′* showing lateral and vertical lithostratigraphic variations of the Fort Union and Wasatch Formations in the western part of the Wyodak extent, Powder River Basin, Wyoming and Montana.

Click on figure to view at higher resolution.

Wyodak Coal of Mapel (1973)

The Wyodak coal of Mapel (1973) is identified in CBM wells (well 3 H, fig. 12; well 105 N, fig. 18) that are located near the type section in the Rawhide School 7.5–minute quadrangle at the east side of the PRB, north of Gillette, Wyoming (fig. 3). This coal interval (labeled "Wyodak-Anderson" coal zone in fig. 12), as plotted in wells 3 H and 105 N, serves as a valuable guide in identifying and correlating it, as well as other units in related coal-bearing strata, across large parts of the PRB.

Cross Section *H–H′*

Cross section *H–H′* (fig. 12) starts at the east end in a coal drillhole located south of the Rawhide mine and shows the 110-ft-thick (33-m) Wyodak coal (labeled "Wyodak-Anderson" coal zone) containing a carbonaceous mudstone parting that separates it into the lower and upper Wyodak, as described by Mapel (1973) in the Rawhide School 7.5–minute quadrangle. At that locality (well 3 H, fig. 12), the lower and upper Wyodak coal beds are recognized as a single bed because the parting is thinner than both coal beds (Wood and others, 1983, p. 15). The Wyodak is a continuous bed for about 1 mi (1.6 km) toward the west (north of the Gillette-Campbell County Airport) where it is split (well 5 H, fig. 12) by a lenticular sandstone and an interbedded unit of finer grained rocks, the combined thickness of which is greater than the thickness of both coal beds. Thus, the lower coal bed is identified as "lower Wyodak" and the upper bed as "upper Wyodak" as originally defined by Mapel (1973). These coal beds remain as a 1st-order split for about 1 mi (1.6 km) farther to the west where they merge into a single bed containing three carbonaceous mudstone partings that is continuous as one bed for about 0.3 mi (0.5 km) to the west (well 7 H, fig. 12). However, before merging, the upper Wyodak coal bed is split into a lower thick bed and an upper thin bed (local rider bed) by a lenticular sandstone and interbedded finer grained rocks; these beds merge farther to the west (well 18 H, fig. 12). Also in this area, the units between the lower and upper Wyodak and rider coal beds thicken and thin, owing to differential compaction of the detrital sediments and peat, which is the precursor of the coal.

Sedimentary compaction resulted in a "roller coaster" configuration of the coal bed surfaces, which is demonstrated repeatedly toward the west where the merged Wyodak coal bed underwent additional splitting and merging for another 9.5 mi (15 km). Within this distance, the Wyodak separates into lower and upper Wyodak coal beds (wells 23 H and 24 H, fig. 12), locally splitting and merging the Smith and upper Wyodak coal beds, in addition to confining the splitting and merging of thinner, unnamed coal beds. The lower Wyodak coal bed, which thins and thickens and locally contains minor partings, is laterally persistent toward the basin center where it becomes a 2nd-order split into thinner beds (well 74 H, fig. 12). Westward, the upper Wyodak coal bed is split (2nd order, well 49 H, fig. 12) by lenticular sandstones and finer grained strata into lower/upper and upper/upper Wyodak coal beds (well 53 H, fig. 12). The lower/upper Wyodak coal bed also re-split (3rd order, 69 H) into lower/lower/upper and upper/lower/upper Wyodak coal beds, with the upper coal bed splitting and pinching out. The lower/lower/upper Wyodak coal, in turn, re-splits (4th order) into two beds (well 87 H, fig. 12) and remerges (well 89 H), and re-splits (5th order) into three beds (well 93 H) with the middle bed splitting into four beds (well 100 H, fig. 12), again the lower bed re-splitting (well 101 H) westward as 6th- through 7th-order hierarchy. The upper bed of the lower/lower/upper Wyodak coal split (6th order) produces two beds (well 103 H, fig. 12). Thus, it is evident that the lateral succession of coal-bed splits caused by juxtaposed lenticular sandstones has a discrete geometric distribution or Markovian chain property—that is, a recognition of repetitive stratigraphic successions of splitting controlled by Markovian processes along the 65-mi (105-km) extent of cross section *H–H′* (fig. 12).

The USGS coal-bed nomenclature system of McKay and Mapel (1973) and Kent and others (1980) includes, in ascending order, the Canyon, Anderson, Swartz, and Smith coal beds, which are applied to the Wyodak coal beds in cross section *H–H′* (wells 10 H–21 H, fig. 12). The lower Wyodak coal bed is equivalent to the Canyon coal bed of Kent and others (1980), the upper Wyodak coal bed and split beds are equivalent to the Anderson and Smith coal beds of Kent and others (1980). These names correspond to the 1st- and 2nd-order splits of the Wyodak coal beds of Mapel (1973). A local coal bed between the Anderson and Smith beds is called the Swartz coal bed by McKay and Mapel (1973). The thin coal-bed split of the lower Wyodak (Canyon), which remerges with the upper Wyodak (Anderson) (wells 13 H–22 H, fig. 12), may be named middle Wyodak coal bed. Where the bed merges with the Anderson coal bed, the splits are named lower and upper Anderson coal beds following Kent and others (1980). The inability of previous studies to devise names for coal bed splits at the 3rd- through 7th-order levels is due to the lack of closely spaced stratigraphic data.

It is readily observed that correlations of the Wyodak coal from the type section of Mapel (1973) westward across the PRB, a distance of about 65 mi (105 km), are difficult, owing to multiplicity of coal beds resulting from repetitive splits to as high as the 7th-order level. By using an average spacing of 0.58 mi (0.9 km) between control points, the 110-ft-thick (33-m) Wyodak coal bed on the eastern margin of the PRB was laterally traced with certainty to the western margin of the basin, where it becomes a 1,100-ft-thick (330-m) interval containing ten coal beds (well 103 H, fig. 12). The ten-fold increase in thickness is the result of greater subsidence along the basin axis and the alluvial fan deposition of large volumes of clastic sediments eroded from the ancestral Bighorn uplift (Weaver and Flores, 1989) and spread eastward in fluvial systems to form thick units between coal beds (Flores, 2003). The shifts, both in space and time of these depositional systems, probably introduced the lateral cyclicity and repetitive successions of the coal beds toward the basin center.

Cross Section *N–N′*

Cross section *N–N′* (fig. 18) is constructed along the eastern part of the Powder River Basin from the Campbell-Converse County line on the south, northward through the coal mines in the Gillette coalfield in Wyoming, to the watershed of Pumpkin Creek in Montana (fig. 3). Southward from the reference CBM well (well 105 N, fig. 18; well 3 H, fig. 12), the 110-ft-thick (33-m) Wyodak coal is split (1st order) by lenticular sandstone and interbedded finer grained sediments into the lower and upper Wyodak coal beds about 1–2 mi (1.6–3.2 km) north of the city of Gillette, Wyoming. The lower bed, which contains a parting, is cut by or pinches out into the sandstone (between wells 102 N and 103 N, fig. 18). However, the lower Wyodak coal bed continues southward split from the upper Wyodak coal bed by a channel sandstone (wells 96 N–97 N, fig. 8). South of this channel sandstone, the upper Wyodak coal bed with partings is a continuous 50- to 100-ft-thick (15–35 m) bed through the west edge of the Gillette coal mines to the north end of the Hilight quadrangle (fig. 3) where the bed merges with rider coal beds (wells 56 N–58 N, fig. 18) that thicken southward. The merged bed is continuous laterally through the west edge of the Jacobs Ranch, Black Thunder, School Creek, North Antelope-Rochelle, and Antelope coal mines. Farther south toward the Campbell-Converse County line, the upper Wyodak coal bed splits into coal beds (2nd order; well 12 N, fig. 18), which then pinch out farther to the south.

North from reference CBM well (well 105 N, fig. 18), the 110-ft-thick (33-m) Wyodak coal splits (1st order) into two beds (well 107 N) for a distance of about 2 mi (3.2 km), which then merge for a short distance before again splitting (1st order) into two beds (between wells 109 N and 110 N). Farther north, each of these two Wyodak coal beds (lower and upper) split (2nd order) into four beds (lower/lower, upper/lower, lower/upper, and upper/upper Wyodak beds) (wells 122 N–123 N). The lower/lower Wyodak coal bed, in turn splits (3rd order) into two beds (lower/lower/lower and upper/lower/lower Wyodak beds (wells 130 N–136 N), which remerge into a 50-ft-thick (15-m) coal bed (well 140 N). The upper/lower Wyodak coal bed splits (3rd order) into two beds (lower/upper/lower and upper/upper/lower Wyodak beds) (well 159 N). These Wyodak coal beds remain laterally persistent and pinch out towards the Wyoming-Montana State line.

The USGS nomenclature system for the principal coal beds in the PRB—in ascending order, the Canyon, Anderson, Swartz, and Smith coal beds as named by McKay and Mapel (1973) and by Kent and others (1980)—may be used along the extent of cross section *N–N′* (fig. 18). Southward from the CBM reference well (well 105 N, fig. 18), which is close to Mapel's (1973) type section, the lower Wyodak coal bed that is cut out at about well 102 N (fig. 18) is the Canyon coal bed. The upper Wyodak coal bed that persists farther southward through the coal mines east of Gillette (Buckskin, Rawhide, Eagle Butte, Dry Fork, Wyodak, Caballo, Belle Ayr, Cordero-Rojo, and Coal Creek) and through the southernmost coal mines east of the town of Wright (Jacob Ranch, Black Thunder, School Creek, North Antelope-Rochelle, and Antelope) is called the Anderson coal bed. However, the local rider coal beds, which merge toward the south with the Anderson in the Hilight quadrangle and north of the Jacobs Ranch coal mine (between wells 49 N and 58 N, fig. 18), in ascending order, are the Swartz and Smith coal beds of McKay and Mapel (1973) and Kent and others (1980). Thus, by definition using the USGS nomenclature system, the coal beds mined in the "South Group" of coal mines (BLM's informal name; Jacob Ranch, Black Thunder, School Creek, North Antelope-Rochelle, and Antelope) are the merged Anderson, Swartz, and Smith coal beds. When these coal beds split south of the Campbell-Converse County line south of the property of the Antelope coal mine, the coal beds are called the Anderson and Swartz-Smith coal beds, in ascending order.

Starting from the Mapel (1973) reference section, the USGS nomenclature following McKay and Mapel (1973) and Kent and others (1980) is as follows. Where the Wyodak coal is split (1st order) into two beds (well 107 N, fig. 18), the lower is the Canyon coal bed and the upper is the Anderson coal bed. Farther northward in the Recluse quadrangle the Canyon coal bed splits (2nd order) into the lower and upper Canyon coal beds, but Kent and others (1980) renamed these beds as Werner for the lower bed and Canyon for the upper bed. In the same area the Anderson coal bed, which in turn splits (2nd order) into lower and upper Anderson coal beds, may be named as Smith and Anderson following Kent and others' (1980) nomenclature system in the Recluse quadrangle. Because of complexity, naming coal beds for higher order splits in cross section *N–N′* (fig. 18) was not attempted.

Basinwide Lateral Variation of the Wyodak Coal

The intersections of the east-west and north-south stratigraphic cross sections are marked by CBM "tie wells" that are common to each section (red well symbols, fig. 3) to aid in correlations and to demonstrate the variability exhibited by the Wyodak coal bed and associated strata in different parts of the PRB. As was illustrated in the foregoing discussion of the cross sections *H–H′* (fig. 12) and *N–N′* (fig. 18), which intersect a few miles northwest of Gillette (fig. 3), this is especially important for comparing east-west trends with north-south trends.

Basin South of Gillette, Wyoming

Cross sections *A–A′* through *G–G′* (figs. 4–11) are all tied to common CBM wells in cross section *N–N′* (fig. 18) on the eastern part of the PRB south of Gillette (fig. 3). The upper Wyodak of Mapel (1973) (Anderson-Swartz-Smith) coal, which is present in each of these CBM tie wells, can be correlated westward across the basin. For example, in cross section *A–A′* the 75- to 100-ft-thick (23–30 m) upper Wyodak

coal zone is laterally persistent to the west and is locally split (1st order) by lenticular sandstone and interbedded finer grained sediments. Farther westward at the basin center, the upper Wyodak coal is split (2nd order) into lower/upper, middle/upper, and upper/upper Wyodak coal beds (wells 8 A–9 A, fig. 4). This group of coal beds was recognized as the Sussex coal zone (well 70 B, fig. 5) by Hardie and Van Gosen (1986); thus the Sussex coal zone is laterally equivalent to the upper Wyodak of Mapel (1973) (Anderson-Swartz-Smith) coal in the southern Gillette coalfield.

Cross section *B–B′* (fig. 5) shows that toward the west, the upper Wyodak coal bed is split (2nd order) into the upper/upper and lower/upper Wyodak coal beds (wells 32 B–39 B) by lenticular sandstones and interbedded finer grained sediments. However in cross sections *C–C′*, *D–D′*, *D″–D‴*, *E–E′*, *F–F′*, and *G–G′* (figs. 6–11), the upper Wyodak coal generally thins and pinches out toward the west (for example, near well 59 C, fig. 6; labeled Canyon and Anderson coals on some cross sections). Thus, the upper Wyodak coal is not laterally persistent and is split only up to 2nd order, and pinches out across the basin center south of cross section *H–H′* (fig. 12) between Gillette, and south of Wright, Wyoming (fig. 3).

Revised Nomenclature of Wyodak Coal South of Gillette, Wyoming

The revision of the correlation of the Wyodak coal of Mapel (1973) in the basin south of Gillette necessitates modification of the names of associated coal beds. The nomenclature of the Wyodak coal beds recognized by McKay and Mapel (1973) and Kent and others (1980)—in ascending order, the Canyon, Anderson, Swartz, and Smith coal beds—may be used basinwide.

South of Gillette, the correlated Wyodak coal in cross section *N–N′* starting from Mapel's (1973) reference locality is the upper Wyodak coal bed, which can also be referred to as the Anderson coal bed. Southward, where two rider coal beds merge with the Anderson coal bed, the first rider coal to merge is the Swartz coal bed following Kent and others' (1980) nomenclature and the second rider coal to merge is the Smith (between wells 49 N and 58 N, fig. 18). The merged coal bed may be collectively named Anderson-Swartz-Smith coal and when it splits southward the lower bed is the Anderson and the upper bed is the Swartz-Smith (well 13 N, fig. 18).

The upper Wyodak coal bed using Mapel's (1973) nomenclature, or the name Anderson-Swartz-Smith coal bed as used by McKay and Mapel (1973) and Kent and others (1980), for the thick coal on cross section *N–N′* (fig. 18) south of Gillette through the "Middle and South Groups" of coal mines (BLM terminology) is correlated to the same thick coal in common with CBM wells in cross sections *B–B′* (wells 18 B, 35 N), *C–C′* (wells 17 C, 45 N), *D–D′* (wells 19 D, 57 N), *D″–D‴* (wells 19 D, 57 N), *E–E′* (wells 20 E, 72 N), *F–F′* (wells 25 F, 86 N), and *G–G′* (wells 13 G, 87 N) (figs. 5–11). Thus, the upper Wyodak (Anderson-Swartz-Smith) coal bed in these east-west cross sections can be correlated basinward (westward) with a greater certainty than was earlier possible. Where the upper Wyodak (Anderson-Swartz-Smith) coal bed splits basinward into three or four beds, such as in cross sections *A–A′* and *B–B′* (figs. 4–5; wells 23 A–28 A; 64 B–76 B), the beds are grouped as Sussex coal zone (Hardie and van Gosen, 1986); in cross section *C–C′* (fig. 6; well 58 C), the upper Wyodak coal bed pinches out and the coal above is named the Big George coal (Kent, 1986) (well 76 C). Elsewhere, the upper Wyodak or Anderson-Swartz-Smith splits and pinches out basinward as in cross sections *D–D′*, *D″–D‴*, *E–E′*, *F–F′*, and *G–G′* (figs. 7–11).

Basin North of Gillette, Wyoming

North of Gillette, the reference CBM wells containing the Wyodak coal of Mapel (1973) (wells 3H, fig. 12 and 105 N, fig. 18) are also tied to a common CBM well (7 I, fig. 13) with cross section *N–N′* (well 111 N, fig. 18) in which the Wyodak coal is split (1st order) and can be readily identified as lower and upper Wyodak coal beds. Starting at the east end of cross section *I–I′* (fig. 13), the Wyodak coal is split (1st order) into the lower and upper Wyodak coal beds (well 4 I) by lenticular sandstone and interbedded finer grained beds; these splits are labeled Anderson and Canyon coal beds. Farther to the west, the lower Wyodak coal (Canyon) is split (2nd order, well 10 I) into lower and middle Wyodak coal beds or lower and upper Canyon of Kent and others (1980) (wells 10 I–17 I, fig. 13). Toward the west, the middle Wyodak coal bed splits (3rd order; well 29 I) and in a short distance the lower bed splits into 3 coal beds, which pinch out (well 31 I, fig. 13). The upper Wyodak coal bed is split (2nd order) into Anderson and Smith using Kent and others' (1980) nomenclature, which also become discontinuous and pinch out (wells 19 I–20 I). The lower Wyodak (Canyon) coal bed contains carbonaceous mudstone partings that caused splitting (well 20 I) and merging (well 25 I), which in turn, farther westward re-splits (3rd order) into lower/lower Wyodak and upper/lower Wyodak coal beds (well 39 I). The upper/lower Wyodak coal bed in turn splits (4th order) into lower/upper/lower Wyodak coal bed and upper/upper/lower Wyodak coal bed (well 48 I). The Wyodak coal beds thin and thicken and are partly discontinuous westward to the west margin of the basin.

Cross sections *J–J′* and *K–K′* are tied to cross section *N–N′* at wells 139 N and 155 N (fig. 18) with the coal-bed splits of the Wyodak coal at wells 14 J (fig. 14) and 23 K (fig. 15), which include the upper/lower, lower/upper, and upper/upper Wyodak beds correlated with the Mapel (1973) reference locality. However, these coal beds alternately pinch out and merge both to the east and west at wells 7 J to 14 J (fig. 14). For example, west of well 14 J on cross section *J–J′* (fig. 14), the upper/lower Wyodak coal bed pinches out eastward between 10 J and 26 J. The lower/upper Wyodak coal bed is split (3rd order) at wells 24 J to 26 J continuing farther westward and merging with the thick Anderson coal bed of Kent and others

(1980), whereas toward the east and west both Wyodak beds pinch out. The upper/upper Wyodak coal bed merges with a thick coal to the west at well 21 J (fig. 14). Toward the west, the merged upper/upper Wyodak coal bed splits (3rd order) into lower/upper/upper Wyodak and upper/upper/upper Wyodak coal beds (well 29 J). The upper/upper/upper Wyodak coal bed splits (4th order), thins (well 30 J), and pinches out westward (wells 76 J–103 J) toward the basin center. An upper split (5th order) of the upper/upper/upper Wyodak or the Smith coal bed of Kent and others (1980) (wells 31 J–103 J, fig. 14) repeatedly merges and splits westward as Smith/Swartz coal zone.

The Wyodak coal in the reference CBM well on cross section *N–N'* (well 155 N, fig. 18) is tied to cross section *K–K'* with a CBM well (well 23 K, fig. 15) containing the upper/upper, lower/upper, and merged lower Wyodak coal beds. Eastward (wells 8 K–10 K; 18 K) and westward (wells 33 K–35 K) from this well, the lower/upper Wyodak merges and splits (3rd order) into lower/lower/upper and upper/lower/upper Wyodak coal beds. The merged lower Wyodak is continuous eastward to the basin margin where it splits (2nd order, well 19 K) into a lower/lower Wyodak coal bed (Werner of Kent and others, 1980) and an upper/lower Wyodak coal bed (Canyon of McKay and Mapel, 1973) (wells 1 K–6 K). Westward the merged lower Wyodak coal bed also splits (2nd order) into the lower/lower Wyodak coal bed and upper/lower Wyodak coal bed (well 28 K). Farther west, the upper/upper Wyodak coal bed splits (3rd order) into lower/upper/upper Wyodak coal beds and upper/upper/upper Wyodak coal bed (well 34 K); these coal beds pinch out westward at the basin center.

Continuing coal-bed correlations westward on cross section *K–K'* (fig. 15) the splits of the Wyodak coal beds (Anderson and Canyon) recognized by McKay and Mapel (1973) on the east margin of the PRB are laterally and temporally equivalent to the coal beds immediately below Dietz 1, 2, and 3 coal beds (in descending order), which were named by Taff (1909) in the Sheridan coalfield on the west margin of the PRB (well 105 K) after the community of Dietz located about 5 mi (8 km) northwest of Sheridan, Wyoming. Starting from the west margin of the PRB in the Sheridan coalfield on cross section *K–K'* (fig. 15), the Dietz 3 coal bed splits (2nd order) into lower and upper Dietz 3 coal beds (well 93 K) then merges basinward (wells 64 K–76 K). This merged bed splits (2nd order) from wells 48 K to 62 K basinward or eastward and is correlated to the coal beds of the upper/upper Wyodak (labeled Smith–Swartz, well 36 K) and below the Roland coal beds (wells 44–58 K) at the center of the PRB. The Dietz 2 bed from the west margin of PRB to the east on cross section *K–K'* (fig. 15) splits (2nd order) into lower and upper Dietz 2 coal beds (wells 93 K–103 K), which in turn, merge farther eastward at about well 92 K and both thin eastward and pinch out in the basin center (well 61 K). The Dietz 1 coal bed eastward from the west basin margin splits (2nd order) into lower and upper Dietz 1 coal beds (wells 93–94 K), the lower bed of which merges eastward to the Dietz 2 and both thin and pinch out toward the basin center (well 61 K). The splits of the Dietz 1 coal bed correlate eastward with a coal bed (labeled Roland) at the basin center (well 58 K).

Cross-section *L–L'* (fig. 16) extends from the western part of the PRB near the East and West Decker, and Spring Creek coal mines in Montana, to the eastern part of the PRB on Olmstead Creek, a tributary of the Little Powder River in Wyoming. Starting from the west a single thick Dietz coal merges in a short distance with an overlying coal (Dietz 1 in well 92 L, fig. 16), then splits (1st order) into the Dietz 1, 2, and 3 coal beds between wells 72 L and 84 L. The Dietz 3 bed thins, thickens, splits, and pinches out eastward (well 37 L, fig. 16) and is correlated to the upper coal bed split of the Canyon coal (Kent and others, 1980) at the eastern part of the PRB. The Dietz 1 and 2 coal beds, from west to east, merge into a thick coal bed (between wells 85 L and 92 L) with a carbonaceous mudstone parting. However, farther to the east, this coal bed splits (2nd order) into the Dietz 1 and 2 coal beds (well 73 L); both beds thin and pinch out farther eastward at the basin center (wells 50 L–54 L). The Dietz 1 coal bed overlaps the Anderson-Smith coal zone and overlying coal beds at the eastern side of the basin.

The Dietz 1 and 2 coal beds in Montana, in cross section *M–M'*, laterally and temporally correlate to the coal beds of the upper Wyodak coal bed of Mapel (1973) or to the Anderson and Smith coal beds of McKay and Mapel (1973) and Kent and others (1980) on the eastern side of the PRB in Wyoming. The lower Wyodak coal bed of Mapel (1973) or Canyon coal bed of McKay and Mapel (1973) and Kent and others (1980) in the eastern part of the PRB in Wyoming, temporally correlates to the Dietz 3 of Taff (1909) on the western margin of the PRB in Montana. The Canyon coal of Baker (1929) on the western side of the PRB in Montana, pinches out and may be correlated to the Cook/Otter coal eastward in the basin. Thus, the Dietz coal zone on the western side of the PRB in Montana, temporally correlates to the Roland, Smith, and Swartz (upper/upper Wyodak) along the eastern part of the PRB in Wyoming (cross section *M–M'*, well 17 L, fig. 15).

Revised Nomenclature of Wyodak Coal North of Gillette, Wyoming

Northward from Gillette through the “North Group” of coal mines (BLM terminology) on cross section *N–N'* (fig. 18) the thick Wyodak coal bed of Mapel (1973) in cross section *H–H'* (fig. 12) splits into two beds that are named, in ascending order, the Canyon and Anderson coal beds (well 110 N, fig. 18) using the nomenclature of McKay and Mapel (1973) and Kent and others (1980). Farther northward where the Canyon coal bed is split (well 123 N), the lower bed is named lower Canyon and the upper bed is named upper Canyon. Kent and others (1980) renamed these beds as the Werner and Canyon coal beds, in ascending order. Where the Anderson coal bed split into two beds (well 117 N) the lower bed is the lower Anderson and the upper bed is the upper Anderson. Kent and

others (1980) renamed these coal beds, in ascending order, the Anderson and Smith coal beds. However, when a local coal bed split from the Anderson, McKay and Mapel (1973) named this bed the Swartz bed (well 126 N).

North-South Cross Sections

Two north-south cross sections through the central and western parts of the PRB were constructed (cross sections *O–O′* and *P–P′*, figs. 19, 20), which, like cross section *N–N′* (fig. 18), include common CBM wells with all the regional east-west cross sections (figs. 4–17). They complete the three-dimensional view of the coals and related rock types basinwide.

The central north-south cross section *O–O′* starts 30 mi (48 km) north-northeast of Glenrock, Wyoming, and extends northward to south of the Otter Creek watershed, Montana (fig. 3). Near the southern end, it intersects cross section *A–A′* (fig. 4) at a common well (well 20 A, fig, 4; well 7 O, fig. 19), which in turn is connected to the east with cross section *N–N′* (fig. 18), thereby enabling a direct correlation with the upper Wyodak coal of Mapel (1973). The upper Wyodak coal, which is represented in the tie wells by three thin individual beds (2nd-order splits), merges northward in a short distance and becomes a 50- to 90-ft-thick (15–27 m) merged coal bed (well 8 O, fig. 19). Farther northward, the upper Wyodak contains a series of “want areas,” for example, three channel sandstones at wells 76 O, 102 O, and 111 O, where the upper Wyodak is about 150-ft thick (50-m) and underlain by a 15- to 80-ft-thick (4.5–24 m) coal of the lower/upper Wyodak. North of this area, the upper Wyodak coal is locally interbedded with carbonaceous partings at well 115 O and merges farther northward with an overlying coal bed (well 127, fig. 19). Toward the north at well 115 O, the lower/upper Wyodak coal is split (3rd order) into lower/lower/upper Wyodak, middle/lower/upper Wyodak, and upper/lower/upper Wyodak coal beds (well 134 O–144 O). These coal beds thin and pinch out (wells 144 O–154 O) into lenticular sandstones and interbedded finer grained sediments northward to the Wyoming-Montana State line.

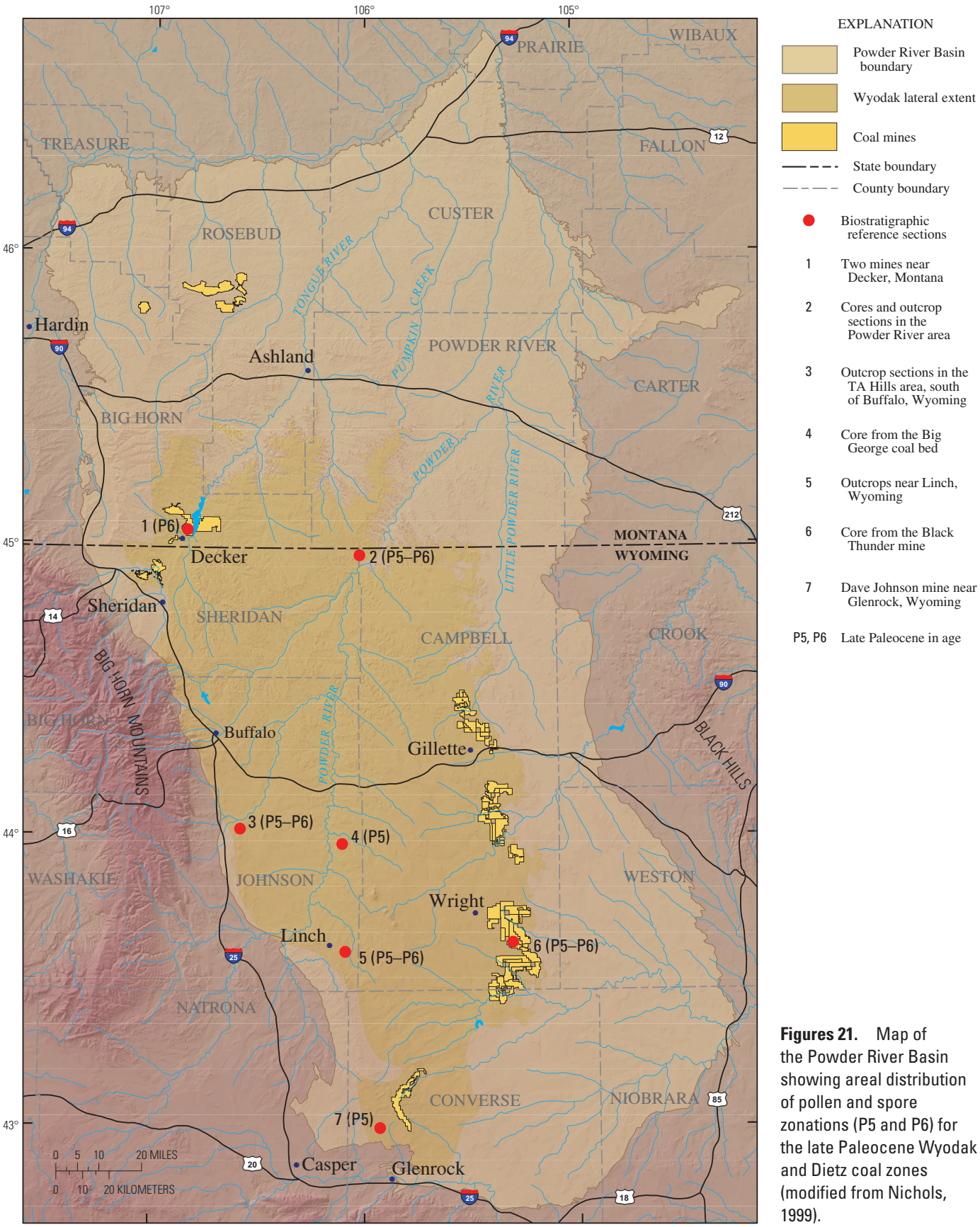
The western north-south cross section *P–P′* (fig. 20) starts about 10 mi (16 km) northeast of Glenrock in the vicinity of the Dave Johnson power plant, goes through the abandoned Dave Johnson coal mine in Converse County, Wyoming, and extends to the area north of the West Decker, East Decker, and Spring Creek mines in Montana (fig. 3). The tie wells at the intersection with cross section *A–A′* are well 28 A (fig. 4) and well 18 P (fig. 20). The upper Wyodak coal at the southern part of the cross section splits (2nd order) into the lower/upper and upper/upper Wyodak coal beds, which were recognized as the School and Badger coal beds, respectively, and were both named and mined in the Dave Johnson coal mine (fig. 20). The lower/upper Wyodak splits and thins between wells 13 P and 18 P, and merges at well 10 P. Northward, the lower/upper and upper/upper Wyodak coal beds remain separated but merge into a thick bed (well 23 P) and split (2nd order) into lower/upper and upper/upper Wyodak coal beds (well 71 P) and re-split (3rd order) into lower/upper/upper, middle/upper/upper, and upper/upper/upper Wyodak coal beds (wells 79 P–89 P). They then continue toward the northwest alternately thinning and pinching out, and can be correlated with the Dietz 1, 2, and 3 coal beds, and the lower Wyodak coal correlated to the Canyon, Carney, and Werner coal zone in the Sheridan, Wyoming, and Decker, Montana, coalfields. From east to west the same overlapping coal correlations of the Dietz and Wyodak coal zones are recorded in cross sections *K–K′*, *L–L′*, and *M–M′* (figs. 15–17). However, the overlap of these coal zones becomes more pronounced toward the northeast part of the basin where the Dietz 3 coal bed is correlated from the Canyon to the Swartz and Smith coal beds in the eastern part of the PRB (for example, cross sections *L–L′* and *M–M′*, figs. 16, 17).

Effects of Stratigraphic Overlap of Coal Zones

A stratigraphic overlapping relation (Swain, 1949) exists between the Dietz coal zone of Montana, and the Wyodak coal zone of Wyoming, along the northern part of the Wyodak extent in the Powder River Basin (fig. 3). This is demonstrated in cross sections *K–K′*, *L–L′*, *M–M′*, and *P–P′* (figs. 15, 16, 17, 20) showing that the Dietz 3 bed overlies successively older Wyodak coal beds. This relation is supported by temporal or chronostratigraphic relations based on palynological zonation (P1 oldest to P6 youngest) within the Fort Union Formation by Nichols (1999). The Dietz coal zone (Taff, 1909) in the Montana part of the Powder River Basin is within zone P6, whereas the Wyodak coal zone in the Wyoming part of the Powder River Basin is within zone P6 and underlying P5 (fig. 21; table 1). Thus, the palynostratigraphic analysis by Nichols (1999) that proved a younging relationship between the coal zones towards Montana, is caused by the stratigraphic overlap of the Dietz coal zone over Wyodak.

Stratigraphic overlapping occurs in older coal zones as shown in cross sections *B–B′*, *H–H′*, *I–I′*, *N–N′*, and *P–P′*, (figs. 5, 12, 13, 18, 20). The Wyodak coal zone (upper Wyodak) in cross section *N–N′* from Gillette to south of Wright, Wyoming, is traced westward to north of Linch, Wyoming, in cross section *B–B′* and northwestward to north of Buffalo, Wyoming, in cross section *P–P′* where the coal zone splits into lower/upper and upper/upper Wyodak. Eastward, this coal zone overlaps underlying coal beds of the coal zone north of Gillette in cross sections *H–H′* and *I–I′*. Thus, coal zones successively overlap in a circular track like a “corkscrew” (Goolsby and Finley, 2000).

The successive overlapping creates serious correlation problems both for the coal beds overlapping and below the Dietz, Wyodak, and underlying coal zones of the Fort Union Formation, and for the overlying coal beds in the Wasatch Formation; thus, coal-bed names from one cross



Figures 21. Map of the Powder River Basin showing areal distribution of pollen and spore zonations (P5 and P6) for the late Paleocene Wyodak and Dietz coal zones (modified from Nichols, 1999).

Table 1. Coal-bed names of the Upper Fort Union Formation from original, previous, and this study. [1]Baker (1929); [2]Bass (1932), Bryson and Bass (1973); [3]McKay (1973), Olive (1957); [4]McKay and Mapel (1973); [5]Mapel (1973); [6]Kent and others (1980).

Rock Units	Pollen Zones	Original Coal-Bed Names		Previous Coal-Bed Names		This Study	
		Taff (1909)	Mapel (1973)	Montana	Wyoming	Montana	Wyoming
Upper Fort Union Formation Tongue River Member	P6			Roland[1]	Roland	Roland/Smith	WYODAK: Smith
				Smith[1]			WYODAK: Upper Wyodak (lower/upper, middle/ upper, and upper/upper)
		Dietz 1		Anderson[1]	Smith/Swartz[4]	Dietz 1	
		Dietz 2	Upper Wyodak	Dietz 1[1]	Anderson (Wyodak)	Dietz 2	WYODAK: Lower Wyodak (lower/lower, middle/lower, and upper/lower)
		Dietz 3	Lower Wyodak	Dietz 2[1]	Canyon[5] (Big George)	Dietz 3	
	P5			Canyon	Carney	Canyon	Carney
				Cook[2]	Werner[6]	Cook	Werner
				Otter		Otter	
				Wall[1]	Gates[6]	Wall	Gates
				Pawnee[3]	Kennedy[6]	Pawnee	Kennedy
				Cache[3]	Carson[6]	Cache	Carson
				Sawyer	Broadus	Sawyer	Broadus
				Knobloch		Knobloch	
				Flowers/Goodale	Roberts	Flowers/Goodale	Roberts
	P4			Terret	Kendrick	Terret	Kendrick

section to the next are not the same. Furthermore, it (1) poses difficulties in tracing coalbed-to-coalbed correlations used by Luppens and others (2008) and the contact between the Fort Union and Wasatch Formations across the Powder River Basin, which was interpreted as erosional, gradational, heavy-mineralogically and palynologically distinct, and stratigraphically variable in position, and (2) more significantly, negates the practice of identifying and correlating coal beds on the basis of the names that have been used previously in the mapping of the beds from one area to another, especially across the northern part of the basin.

Consequently, the Werner, Gates, Kennedy, and Carson coal beds of Kent and others (1980) (for example, see cross section *J–J′*, fig. 14) in stratigraphically descending order, can probably be correlated to the Pawnee, Cache, Sawyer, and Knobloch coal zones of Culbertson and others (1979) in Montana (for example, see well 60 L, cross section *L–L′*, fig. 16), based on their position relative to the Wyodak coal of Mapel (1973) in Wyoming, and the stratigraphic overlap. The Smith-Roland coal beds of Baker (1929) above the Dietz coal zone in Montana, are probably correlated to the lowermost coal beds of the Wasatch Formation in Wyoming, creating overlapped contact. Thus, in general, the Fort Union coal beds in Wyoming, are correlated to older Fort Union coal beds in Montana, and the uppermost coal beds in Montana, are correlative to the lowermost coal beds of the Wasatch Formation in Wyoming. However, despite the difficulties that have been encountered in correlating coal beds and defining their boundaries, a few characteristics emerge that are useful for interpreting the paleodepositional, paleogeographic, and paleotectonic settings of the coal-bearing rocks, as discussed in the following section.

The most important effect of the Dietz coal zone overlapping the Wyodak coal zone, both containing major Fort Union coal reserves (about 50 percent) in the PRB, is the lack of occurrence of thick coal beds in the overlapped area south of the Montana and Wyoming State line. For example, in the areas from about T 48 N to T 57 N and R 71 W to R 78 W (fig. 3) thinning and pinching out of related coal beds of these coal zones established in cross sections *K–K′*, *L–L′*, *M–M′*, *O–O′*, and *P–P′* (figs. 15, 16, 17, 19, 20) reduced the number of coal beds greater than 5-ft (1.4-m) thick, which can be measured and calculated as a resource base (Wood and others, 1983). In the past, in this “want” area of overthickened, sandstone-dominated alluvial deposits, coal beds were projected across the northern subsurface of the PRB and depicted as containing thick economic beds.

Paleodepositional Interpretations

The basinwide network of stratigraphic cross sections presented here provides a basis for interpreting the depositional environments, paleogeography, and structure of the coal-bearing strata in the Fort Union and Wasatch Formations in the PRB. Local and regional distribution patterns of the coals and interbedded rocks were controlled by allogenic and autogenic factors imposed on the paleodepositional systems: (1) the allogenic factor reflects the paleotectonic conditions (for example, subsidence and uplift) that affected the sedimentation in the basin and outlying areas, and (2) the autogenic factor reflects changes in the depositional processes (for example, lateral shift, abandonment, migration of fluvial channels) that affected local depositional trends (Flores, 1986).

The paleotectonic setting of the basin and adjacent uplifts influenced the framework architecture of the paleodepositional and paleogeographic settings. The isopleth map in figure 22, showing elevations (with respect to sea level) at the base of the Wyodak coal zone, reflects the general configuration of the floor of the PRB. As indicated, the area of greatest subsidence trends southeast to northwest and lies close to the Bighorn Mountains front where there was crustal loading created by eastward thrusting of the basement igneous and metamorphic rocks of the uplifted highlands over sedimentary rocks and lineament structures along the basin margin (Flores, 2003). The southeast to northwest trend of increased subsidence is clearly evidenced also by the large increase in the thickening of the Wyodak coal zone coincident to the "want" area (fig. 23) and the numerous coal bed splits that in places were of the 6th and 7th orders, which resulted in large part from the large sediment influx from sources to the west. These close associations between depositional environments and tectonic setting, coal splitting and thickness, and areal distribution of coal beds, are particularly well shown in the Wyodak coal zone in the Wyoming part of the Powder River Basin. As traced from east to west, the 1st order of splitting is near the east margin, and then it proliferates greatly to the west (see, for example, cross section *H–H′*, fig. 12).

Paleodeposition of the Wyodak Coal Zone and Related Rocks

The areas of merged thick coal beds coincide with the "Middle and South Groups" of coal mines (BLM terminology) of the Gillette coalfield (fig. 3). In these areas, the coal bodies are divided into a number of coal benches separated by layers or partings of carbonaceous mudstone, shale, siltstone, and tonsteins (altered volcanic ash) that are persistent across the coalfields and provide detailed documentation of the sedimentary processes that were active during the deposition of the coals. As an example, in the southern portion of *N–N′* (fig. 18) between wells 14 N and 40 N, the upper Wyodak coal shows a parting between the lower and upper benches that is generally widespread. However, the behavior of the parting varies considerably, as it laterally grades into thick interbedded mudstone, siltstone, and sandstone representing interfluve and fluvial channel deposits that reflect contemporaneous active channel-overbank conditions along the margins of the coal bodies. This depositional pattern is repetitive along the north-south direction where the lower and upper coal benches are split and thickened; where the interfluve and fluvial channel deposits are thinned, the coal benches remerge into a thick bed.

The rocks beneath the coal bodies shown in figures 4 (*A–A′*), 5 (*B–B′*), 6 (*C–C′*), and 18 (*N–N′*) are predominantly sandstones. There is relatively little available lithostratigraphic data in these older rocks because the CBM wells generally were not drilled deep enough to penetrate them. Where penetrated in some places, however, there is an indication that coal beds formed on somewhat elevated topographic areas. These apparent elevated locations of coal bodies and the associated laterally persistent local benches and partings suggest that the original peat deposits accumulated on abandoned fluvial channel and interfluve areas containing poorly compactable fluvial channel sandstones.

Overlying the coal bodies is a complex series of mudstones, siltstones, and sandstones representing interfluve and fluvial channel depositional environments. The upper coal bench appears to interfinger with these fluvial deposits, causing the coal to split into beds that rise stratigraphically from the main seam while thinning continuously toward the center of the body (see, for example wells 50 N–58 N, cross section *N–N′*, fig. 18). These deposits appear to be replaced vertically and laterally by dominantly fluvial channel sandstones representing alluvial ridge depositional environments.

In contrast to these marginal alluvial ridges are much narrower, isolated sandstones (about 1-mi wide (1.6-km)) that cut into the coal and the central part of the coal bodies (see wells 76 O, 102 O, and 111 O, cross section *O–O′*, fig. 19). These sandstones are infill deposits of a single north-trending fluvial channel system, also contemporaneous with bog development. These channels are confined by a peat bog deposit where it is thickest and represents a sluggish, anastomosed creek. These northerly trending fluvial channels, as shown in north-to-south cross sections *O–O′* and *P–P′* (figs. 19, 20) and east-west cross sections *B–B′* and *F–F′* (figs. 5, 10), indicate that the sandstones cut the entire coal body on the south and progressively cut less of the coal body and related coal split on the north, suggesting that basin subsidence increased to the north. Crevasse channels or streams, which fork into the main coal body as shown in figure 3, trend southeastward and are interpreted to join the alluvial belt to the north.

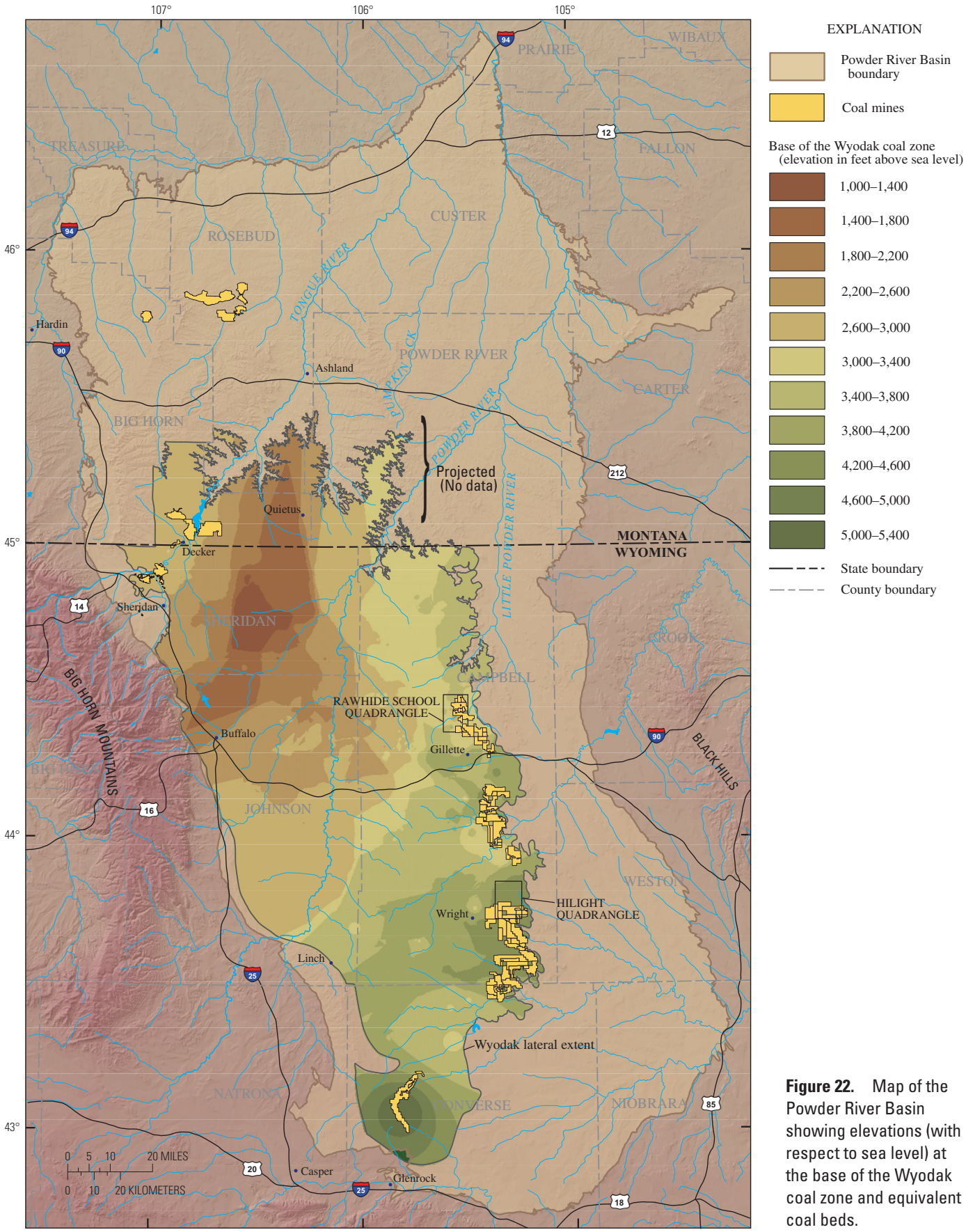


Figure 22. Map of the Powder River Basin showing elevations (with respect to sea level) at the base of the Wyodak coal zone and equivalent coal beds.

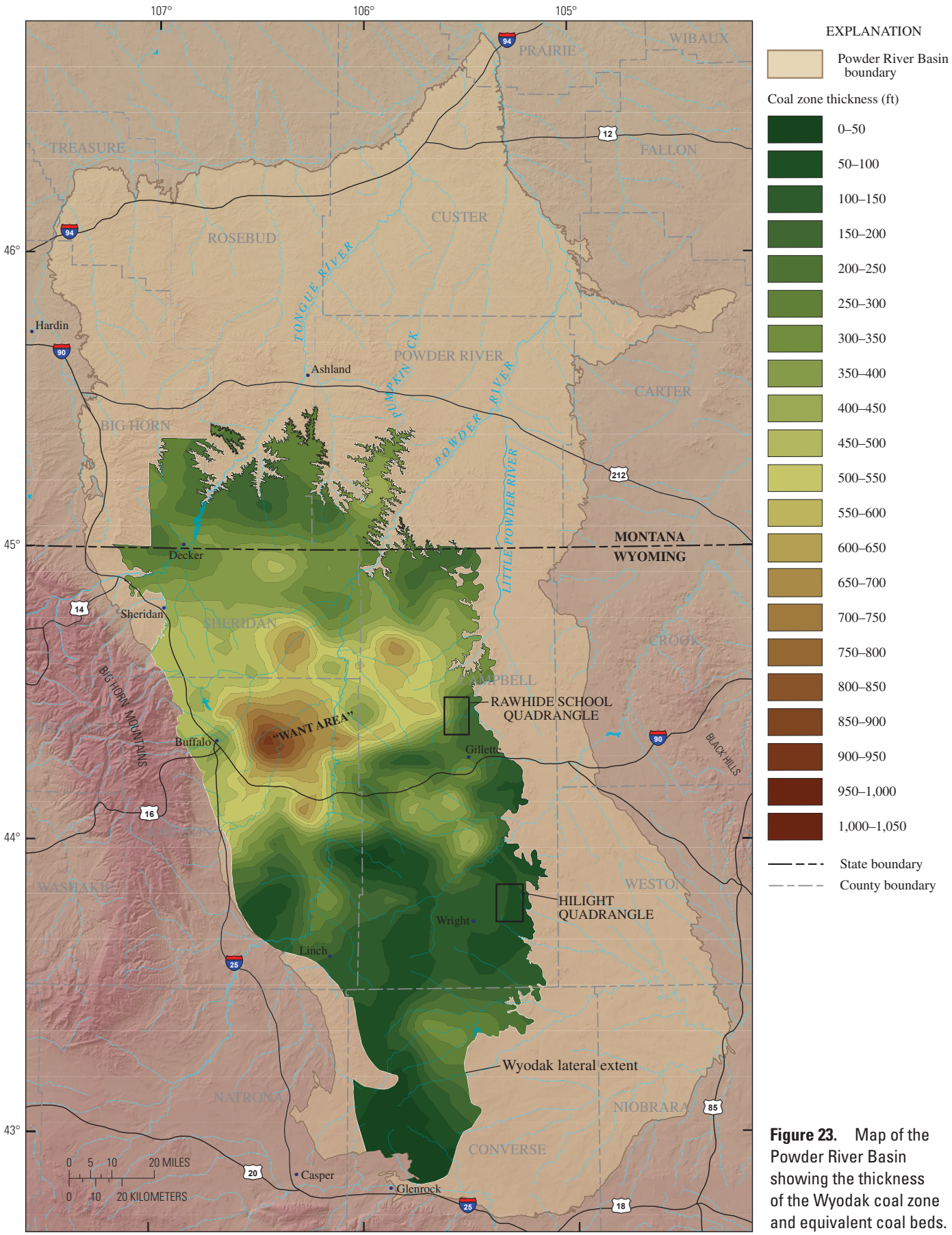


Figure 23. Map of the Powder River Basin showing the thickness of the Wyodak coal zone and equivalent coal beds.

Paleotectonically Controlled Alluvial Drainage

Coal-bearing rocks in the western part of the PRB that are laterally equivalent to the main coal beds at the eastern basin margin (see coal split/pinch out in fig. 3) are similar to those that underlie and overlie the upper Wyodak coal (see cross section *N–N′*, fig. 18). The major exception occurs in the west-central area (see cross section *O–O′*, fig. 19) at the margins along the split lines (west of the tie wells of *D–D′* and *D″–D‴*) of the coal bodies where there is greater proportion of sandstones that are vertically stacked and wide (width about 2–3 mi (3.2–4.8 km)) and are interbedded with mudstones and siltstones. Here the coals split, rise, and thin indicating that abandoned deposits of the fluvial channels and overbank-floodplain environments were inundated by alternating short-lived bogs. The peat bogs were repetitively reoccupied by sinuous fluvial channels and crevasse splays, which formed broad alluvial drainage networks or ridges (Flores, 1986), entrenched by thick peat deposits of the main coal. The high proportion of relatively noncompactable sandstones transformed this broad belt into a series of elevated alluvial ridges affected by oxidation and flood-borne sediments, which inhibited growth of peat-forming vegetation. This alluvial belt generally trends southwest to northeast across the PRB between the Wyodak split line on the south and the Dietz split line on the north (fig. 3) along depositional dip, with the sediments being derived from the uplifted ancestral Bighorn Mountains and adjoining highlands (Flores, 2003).

West-east cross sections *A–A′* to *L–L′* (figs. 4–16) and north-south cross sections *N–N′*, *O–O′*, and *P–P′* (figs. 18–20) show coal splits to higher orders toward this alluvial belt where active sedimentation persisted for a long period of time. The merged Wyodak coal bed/zone on cross section *H–H′* (fig. 12), as much as 110-ft-thick (33-m) along the eastern side of the basin, splits into as many as seven thin coal beds (see for example, well 103 H, fig. 12) within a 1,100-ft-thick (330-m) interval toward the west margin of the basin or a thickening of ten times in the direction of the alluvial ridge. Accommodation space at the west margin of the basin for this interval of thick deposits of the Wyodak coal zone is controlled by basin subsidence and related uplift of the Bighorn Mountains. Sequential unroofing of the ancestral Bighorns of Precambrian, Paleozoic, and Mesozoic age rocks during the middle to late Paleocene led to eastward to northeastward sediment dispersal along the alluvial belt, with decreasing amounts of the mechanically less durable rock fragments (for example, micaceous and polycrystalline quartz rock fragments; Whipkey, 1988) and of coarser-grained pebbles to boulders (Flores, 1986; Whipkey, 1988). The presence of about 1,400 ft (420 m) of late Paleocene age conglomerates in the upper Fort Union Formation along the northeast flank of the Bighorn Mountains supports this concept of tectonic uplift accompanied by erosional unroofing concomitant with basin subsidence that created sediment accommodation space and the dispersal of detritus by mountain-front alluvial fans (Flores, 1986).

Interplay of Alluvial Accommodation Space, Tectonics, and Coal Zone Overlap

Alluvial accommodation is defined as the space between the surface of erosion and the aggraded fluvial profile (Catuneanu, 2006) in response mainly to tectonic and (or) basin subsidence in the realm of an intermontane basin. That is, the distribution and geometry of alluvial sequences are influenced by tectonism, which created alluvial accommodation space following basin subsidence. In the case of the PRB, the rate of subsidence was induced by flexural loading of crustal thrusting of the Bighorn uplift (Jenkins, 1986), which increased toward the 50-mi-long (80.5 km) thrust complex from west of Buffalo to Dayton, Wyoming (fig. 24). Vertical movements of as many as three thrust faults were interpreted and related by Jenkins (1986) to syntectonic conglomerates of the upper Fort Union and Wasatch Formations deposited in mountain front alluvial fans during late Paleocene through late Eocene time (Flores and Warwick, 1984; Flores, 1986, 1993; Weaver and Flores, 1989). More importantly, northeast-trending lineaments such as the Tensleep-Harding and Big Horn-Custer (Marrs and Raines, 1984) and related lineament structures such as the Cross Creek, Kearny Creek, and Florence Pass (fig. 24), show vertical displacements of 400–600 ft (135–200 m) during Cenozoic movements on the faults (Hoppin and Jennings, 1971) and contributed to the basin subsidence and accommodation space. The trends of these 3 to 9-mi-wide (5–15 km) structural lineament zones reflect basement tectonic movements (fig. 24; Marrs and Raines, 1984), which may have controlled alluvial sedimentation in this accommodation space in the west-central part of the basin.

Crustal shortening and thrust loading (Dayton, Piney Creek, and Clear Creek thrust blocks; fig. 24) of the Bighorn uplift accompanied by crustal lineament movements extending on the west-central margin of the PRB during the middle to late Paleocene (Jenkins, 1986; Flores, 2003) created a disparity in the amounts of basin subsidence from the Wyoming to the Montana parts of the basin. The difference is indicated by a comparison of the thickness of the Wyodak coal zone in that part of the PRB in Wyoming, which is 1,100 ft (330 m) (see wells 125–126 P, fig. 20), with that of the equivalent interval to the northwest in Montana, which is 450 ft (135 m) (see well 212 P, fig. 20 and well 101 H, fig. 12). This represents a thickening of two and one-half times towards the southeast, which was superimposed on raised basement platforms (fig. 24) formed by vertical movements of lineaments extending from the Black Hills during the Cretaceous time (Slack, 1981).

The most serious coal-correlation problems arise in the overlap of the uppermost Paleocene Dietz coal zone on the (older) upper Paleocene Wyodak coal zone east of the area of Sheridan, Wyoming, and Decker, Montana (for example, cross sections *K–K′*, *L–L′*, figs. 15, 16). This general trend in the distribution of thick coal beds reflects the eastward and southward progradation of alluvial deposits across the Montana and Wyoming State line.

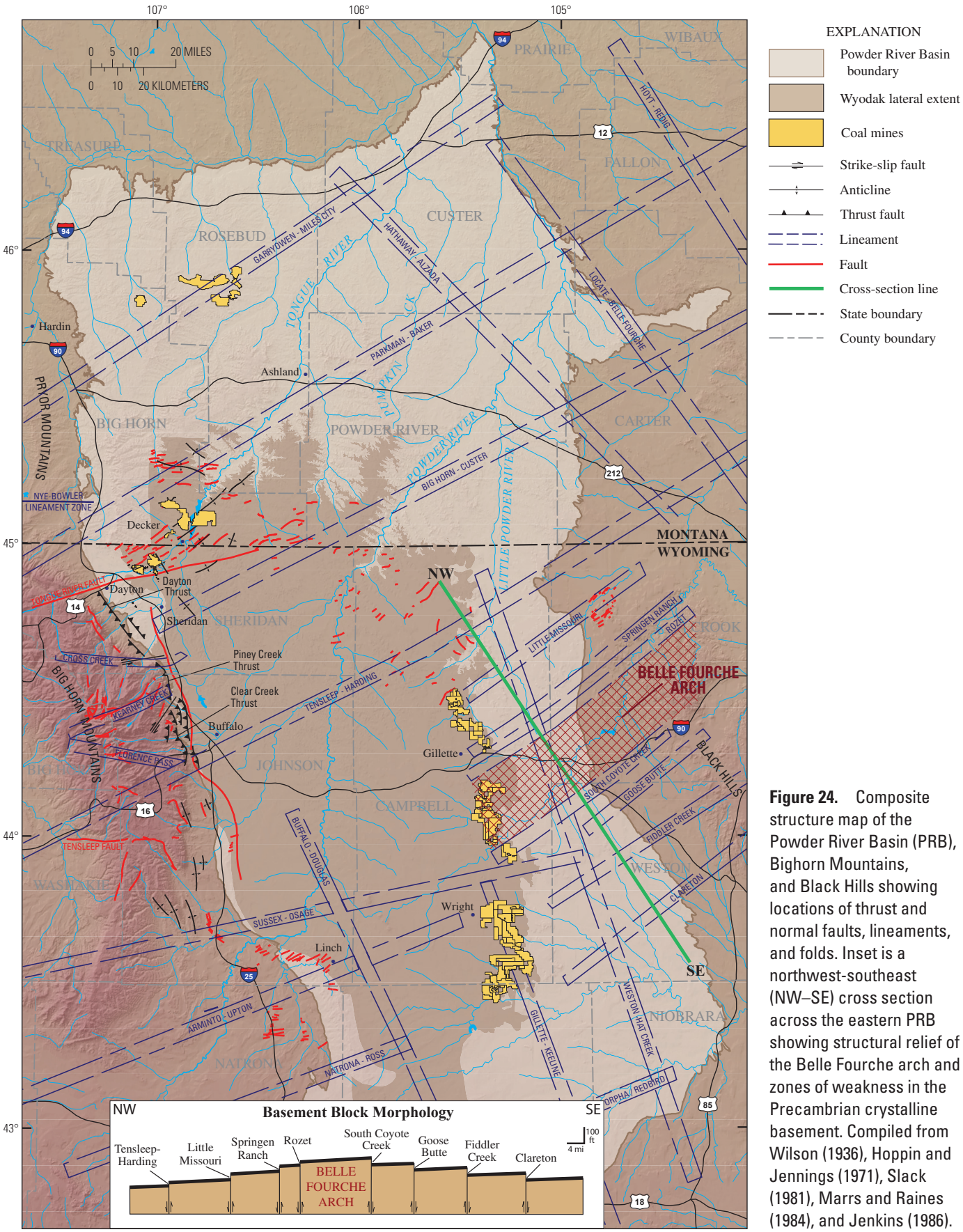


Figure 24. Composite structure map of the Powder River Basin (PRB), Bighorn Mountains, and Black Hills showing locations of thrust and normal faults, lineaments, and folds. Inset is a northwest-southeast (NW–SE) cross section across the eastern PRB showing structural relief of the Belle Fourche arch and zones of weakness in the Precambrian crystalline basement. Compiled from Wilson (1936), Hoppin and Jennings (1971), Slack (1981), Marrs and Raines (1984), and Jenkins (1986).

The relative stability of the substrate in the Sheridan-Decker area provided a raised platform of abandoned alluvial deposits on which peat accumulated to form the Dietz coal zone, in similar fashion to the alluvial platform on which the Wyodak coal zone formed in the Gillette coalfield. The splitting of the Dietz coal zone to the east-southeast suggests repetitive peat encroachment and progradation from a passive area in Montana into a subsiding-sensitive substrate of active alluvial sedimentation in Wyoming. Thus, basin subsidence played an important role in coal depositional facies distribution and also influenced the geometry of the merged Dietz coal zone. The proposed overlap of the Dietz coal zone into a vertically thickened alluvial deposit under a contemporaneously and rapidly subsiding basin is characteristic of peat progradation, which resulted in off-phase or off-synchronous peat accumulation with those peat deposits of the Wyodak coal zone. Alluvial accommodation outpacing sedimentation rates generated progradation of the peat deposits of the Dietz coal zone resulting in the overlapping stratigraphic relations of these coal zones. A similar process in the southeast PRB permitted accumulation of thick peat of the Wyodak coal zone and accompanying rapid basin subsidence promoted its overlapping with older coal beds.

Regional Paleogeographic and Paleotectonic Patterns of Merged Coal Bodies

The regional paleogeographic patterns of the merged coal bodies of the Wyodak and Dietz coal zones appear to be influenced by peat deposition on noncompactable, sandstone-dominated, alluvial-belt deposits superimposed on paleotectonic platforms. The lateral migration, avulsion, and abandonment of these platforms resulted in random distribution of the merged coal bodies. More importantly, the merged coal bodies are split into areas with little or no coal, or where they gradually thin and pinch out into fluvial channel, crevasse splay, and overbank-floodplain deposits. The length of time that a peat bog deposit continues to accumulate plays a major role in the final thickness of the coal bed. In the case of the alluvial facies, long periods of peat accumulation on the flanks of the fluvial channels prolonged the entrenchment by subsidence and led to exceedingly continuous coal deposits.

The merged coal bodies of the Wyodak coal zone are representative of a relatively longer duration of entrenchment of a laterally equivalent fluvial environment, which was mainly controlled by regional basin subsidence and accumulation on a raised structural platform (for example, the Belle Fourche arch, fig. 24). The deposit is as much as 145-ft (44-m) thick and is areally distributed over about 2,000 mi^2 (1.3 million acres) in the eastern and southeastern parts of the PRB. The thickness isopach map of the merged Wyodak coal deposit, based on 12,197 CBM-well control points, shows continuous accumulation across the lineament zones (fig. 25). This blanket of coal is divided into two mappable, east-west oriented, oblong-shaped bodies covering from 1,000 to 1,200 mi^2 (640,000–768,000 acres) between an area north of Gillette to south of Wright, Wyoming, separated by a “want” area north-northeast of Wright. This east-west oriented “want” area of split coal beds consists of a 2 to 3-mi-wide (3.2–3.6 km) belt of fluvial channel sandstones and overbank deposits, which split the merged coal bodies of the Wyodak coal zone (see cross section *N–N′*, fig. 18 between tie wells with cross sections *C–C′*, fig. 6 and *D–D′*, fig. 7). These sub-bodies, in turn, were dissected by small, silty sand-infilled, anastomosed stream channels and locally interrupted by crevasse channels and splays sourced from the fluvial channel “want” area. Similar east-west oriented fluvial channel “want” areas flanked the north and south margins of these coal subbodies. The orientations of the coal subbodies and fluvial channel “want” areas (fig. 3) are not parallel to trends of the lineament structures and Belle Fourche arch (fig. 24). A major north-south thinning of the coal at contour lines 25–75 ft (8–23 m) occurs across the oblong-shaped bodies, which represents an area underlain by an alluvial ridge. In addition, the “North, Middle, and South Groups” of coal areas of the Gillette coalfield, where minable deposits formed, appear to be randomly cross-cut by northeast-trending Little Missouri, Springen Ranch, Rozet, South Coyote Creek, Goose Butte, Fiddler Creek, and Clareton, and northwest-trending Gillette-Keeline and Buffalo-Douglas lineament zones (fig. 24).

The east-northeast-trending and basement-controlled lineament structures in the Black Hills uplifts extending into the eastern PRB (fig. 24), which were active during the Cretaceous time and localized hydrocarbon-bearing fluvial channel and offshore marine sandstones (Slack, 1981), did not influence accumulation of the thick merged Wyodak coal bodies. The areal distribution and directions of elongation along the 100-ft (30-m) contour line of the merged Wyodak coal bodies, developed in the “Middle” and “South Groups” of coal-mine areas (Gillette coalfield), are unrelated to the 20-mi-wide (32-km), northeast-trending Belle Fourche arch and adjoining lineaments and the northwest-trending Gillette-Keeline lineament in the southeast PRB between Gillette and Wright, Wyoming (fig. 25). The vertical displacement of lineaments along the Belle Fourche arch, which was about 200 ft (61 m) during Cretaceous time (Slack, 1981), may have been either inactive or diffused into overlying rocks to influence alluvial deposition during Paleocene time. The 80-ft (24-m) contour line of the merged Wyodak coal body in the “Middle Group” coal-mine area in the Gillette coalfield is uniformly thick across the South Coyote Creek, Rozet, and Springen Ranch lineament zones, which indicates no recurring fault-block movements (fig. 25). Also, the Sussex-Osage lineament zone extends across the thickest part of the merged Wyodak coal body along the 100- to 125-ft (30–38 m) and 50- to 75-ft (15–23 m) contour lines between the “Middle and South Group” coal-mine areas in the Gillette coalfield, which also indicates no basement block movement (fig. 25). The merged Wyodak coal shows uniform thickness along 75- to 100-ft

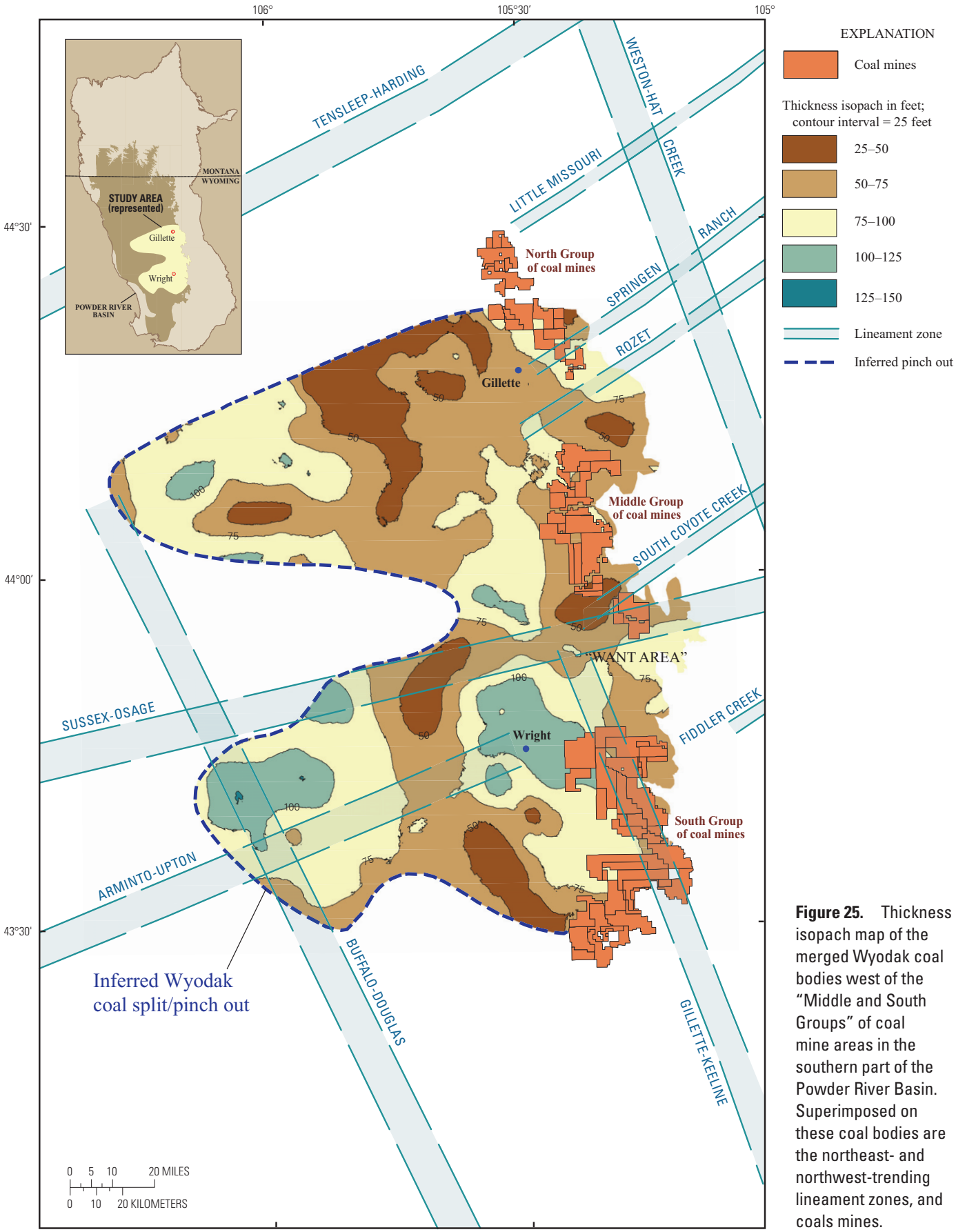


Figure 25. Thickness isopach map of the merged Wyodak coal bodies west of the "Middle and South Groups" of coal mine areas in the southern part of the Powder River Basin. Superimposed on these coal bodies are the northeast- and northwest-trending lineament zones, and coals mines.

(23–30 m) and 100- to 120-ft (30–37 m) contour lines west of the “South Group” of coal areas across the northwest-trending Gillette-Keeline and Buffalo-Douglas lineament zones, which suggests no repeated movement of basement blocks during coal deposition (fig. 25). The east-west split lines of the coal bodies, which represent an axis of fluvial sedimentation, are against the northeast structural lineament grain (fig. 25).

The merged coal body of the Dietz coal zone is representative of a shorter duration entrenchment of a laterally equivalent fluvial environment that was affected mainly by substrate sediment autocompaction that created a topographic low through which fluvial channels were directed. This elongate coal is as much as 80-ft (24-m) thick and areally occupies more than 800–900 mi^2 (512,000–576,000 acres) in the northwestern part of the basin (Flores, 1986; Moore, 1986); thus, it is about half the size of the merged coal bodies of the Wyodak coal zone.

Other merged coal bodies below the Wyodak and Dietz coal zones, such as the Wall, Pawnee, and Knobloch-Sawyer-Rosebud coal zones in the northern part of the PRB were described by Flores (1986) and Sholes and Daniel (1992), are interpreted to have short-lived depositional histories, similar to the Dietz coal zone. These merged coal bodies vary in shape from elongate to lenticular, range from 50 to 80 ft (15–24 m) in thickness, cover about 150– to 900–mi^2 (96,000–576,000 acres) areas, and are underlain by abandoned, noncompactable sandstone-dominated alluvial deposits and flanked by fluvial channel deposits.

The Wasatch Formation overlying the Fort Union Formation is replete with merged coal bodies that accumulated on sandstone-dominated alluvial belts such as the Felix, Lake de Smet, and Ulm coals in the north-central part of the PRB. The alluvial belts are noncompactable, fluvial sandstone-dominated facies. These merged coal bodies vary in shape from oblong to elongate, are 50–250 ft (15–76 m) thick, and cover 100–900 mi^2 (64,000–576,000 acres) areas (Warwick, 1985; Flores, 1986). Like the Fort Union merged coal bodies, they are flanked by fluvial channel-crevasse-floodplain strata, except for the Lake de Smet coal that is flanked on its western margin by alluvial fan deposits (Flores, 1986).

Summary

Active CBM development in the Fort Union and Wasatch Formations, with the drilling of as many as 16 wells per square mile (6.2 per square kilometer), provided unprecedented closely spaced stratigraphic data that permitted regional correlations of coal beds in the PRB. A network of interconnected regional stratigraphic cross sections, the construction of which was made possible by this extensive dataset, has led to revisions of coal-bed correlations and nomenclature that heretofore were subject to considerable controversy and diverse interpretation. In addition, the basic data show that many characteristics of the coal beds, such as areal distribution, thickness, and lateral continuity, and of roof and floor rocks and partings, can be attributed to the depositional environments in which the original peat bogs accumulated.

The following general conclusions are made from the results of this basinwide study of the coals and coal-bearing strata in the PRB.

1. The Wyodak coal zone, which presently produces about 40 percent of the total coal production in the U.S. and 70 percent of the coalbed methane in the PRB, Wyoming, has about a ten-fold increase in thickness from the eastern to west-central parts of the basin. This appears to be the result of differential basin subsidence induced by thrust loading and vertical movement of lineament structures of the Bighorn uplift over the west-central basin margin.

2. In this area, the accommodation space created by basin subsidence became a site for the accumulation of thick alluvial sediments derived from erosion of the rising Bighorn uplift.

3. Concomitant with entrenchment and active sedimentation within this subsiding area, there was prolonged peat accumulation along the eastern basin flank, which formed the widespread Wyodak coal zone. The peat deposits, which in turn split toward the alluvial belt in the basin interior, accumulated on abandoned older alluvial belts dominated by noncompactable sandstones superimposed on the Belle Fourche arch and surrounding lineament structures along the eastern PRB.

4. The east-west orientation, distribution, and uniform thickening of the merged Wyodak coal bodies as well as the associated east-west trend of fluvial sedimentation across the northeast- and northwest-trending lineament zones, which were active during Cretaceous time, suggest lack of structural reactivation of lineaments to influence accumulation of coal during Paleocene time in the southern and eastern PRB.

5. The Dietz coal zone in Montana is interpreted to overlap eastward over the Wyodak coal zone in Wyoming along the northern part of the PRB. This relation is supported by pollen zonation by Nichols (1999), in which the Dietz coal is in the P6 zone (uppermost Paleocene), whereas the Wyodak coal is somewhat older, being partly in the P5 zone.

6. The successive overlapping and splitting of coal beds/zones lead to modifications of the correlations and names of coal beds that are laterally equivalent or lie below and above them, and to revising assessment methodology of coal resources, as follows: (a) the Anderson and Canyon coal beds or upper and lower Wyodak coal beds (in descending order) of the Wyodak coal in Wyoming, are laterally and temporally equivalent to coal beds below Dietz 1, 2 and 3 coals of Taff (1909) in the Sheridan (Wyoming) and Decker (Montana) areas; (b) the Dietz

1 and 2 coal beds (in descending order) in Montana, are laterally and temporally equivalent to the Roland and overlaps the Anderson and Smith coal beds or the upper Wyodak coal of Mapel (1973) in Wyoming; (c) the upper Wyodak coal traced in a circular track overlaps the coal beds below the lower Wyodak coal; and (d) the thinning and pinching out of Dietz and Wyodak coal beds within the over-thickened alluvial area potentially reduces estimates of coal resources.

7. The nomenclature of coal beds of the Wyodak and Dietz coal zones and in the Tongue River Member of the Fort Union Formation should be modified to reflect the revised correlations, which resulted in coal-bed names from previous studies not applied consistently across the PRB (for example, from cross section *A–A′* to cross section *P–P′*).

8. The thicknesses and areal distribution of the major coals in the Fort Union and Wasatch Formations generally follow alluvial plain depositional patterns that reflect accumulation of sediments in an aggrading intermontane basin. In this setting, rapid basin subsidence during fluvial sedimentation resulted in thin coal beds that display abrupt lateral variations and abundant splitting, whereas slower subsidence rates closer to the basin margin (in this case, east margin of the PRB) favored the formation of thicker beds with greater lateral continuity. The understanding of alluvial coal in peat bog depositional environments and contemporaneous external and internal paleotectonic controls assisted in insights regarding the origin of these important economic resources in the PRB.

9. Finally, only comprehensive basinwide, circular track correlations of coal beds and associated detrital rocks in connected three-dimensional cross sections, not piecemeal disconnected one- or two-dimensional cross sections, provide a conclusive understanding of the depositional environment of the Fort Union and Wasatch Formations.

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Appendix

Appendix 1. Appendix includes the Well Number (tie well indicated by <>); Cross Section where the well is represented; American Petroleum Institute (API)/Well ID number; Operator of the well; Well Name; County; State; Log Type (gamma ray, resistivity, lithologic log (lith-log), and spontaneous potential) used from the well; Well Type (coalbed methane (CBM), oil, natural gas, and coal). A more extensive Appendix in Microsoft Access format is on the CD-ROM that accompanies this report.—Continued

Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
1	A-A'	49-009-20111	ROYAL RESOURCES EXPLORATION	WOODS-FEDERAL 1-25	Converse	WY	Resistivity	Oil/Natural Gas
2	A-A'	49-009-22138	DNR OIL & GAS INC	W COAL BANK I W-6477 1	Converse	WY	Gamma Ray	Oil/Natural Gas
3	A-A'	49-009-20280	Y-H-S GROUP	FEDERAL-L 1	Converse	WY	Gamma Ray	Oil/Natural Gas
4	A-A'	49-009-20245	INEXCO OIL COMPANY	USA-PRE 8	Converse	WY	Resistivity	Oil/Natural Gas
5	A-A'	49-009-27859	MIDGARD ENERGY COMPANY	FURCH 22-32	Converse	WY	Gamma Ray	Oil/Natural Gas
6	A-A'	49-009-22042	RICHARDSON OPERATING CO	FEDERAL P W-48380 P-1	Converse	WY	Gamma Ray	Oil/Natural Gas
7	A-A'	49-009-22155	MIDGARD ENERGY COMPANY	BRANNON 43-25	Converse	WY	Gamma Ray	Oil/Natural Gas
8	A-A'	49-009-20081	WOODS PETROLEUM CORPORATION	DILTS-FEDERAL 1	Converse	WY	Gamma Ray	Oil/Natural Gas
<9>	A-A'	49-009-21321	WOODS PETROLEUM CORPORATION	VERSE UNIT 1	Converse	WY	Gamma Ray	Oil/Natural Gas
10	A-A'	49-009-22133	MAXIM DRILLING & EXPL INC	PELICAN W-35732 11	Converse	WY	Gamma Ray	Oil/Natural Gas
11	A-A'	49-009-22082	MAXIM DRILLING & EXPL INC	FULMAR W-35733 1	Converse	WY	Gamma Ray	Oil/Natural Gas
12	A-A'	49-009-27876	YATES PETROLEUM CORPORATION	SUPERFORTRESS CS ST 1	Converse	WY	Gamma Ray	CBM
13	A-A'	49-009-27878	YATES PETROLEUM CORPORATION	FIFI CS STATE COM.	Converse	WY	Gamma Ray	CBM
14	A-A'	49-009-27897	YATES PETROLEUM CORPORATION	SENTRY CS STATE 8	Converse	WY	Gamma Ray	CBM
15	A-A'	49-009-22314	HOME PETROLEUM CORPORATION	KERR MCGEE POTTER 1-34	Converse	WY	Gamma Ray	Oil/Natural Gas
16	A-A'	49-009-20211	KERR-MCGEE CORPORATION	FEDERAL-AMERADA 1	Converse	WY	Gamma Ray	Oil/Natural Gas
17	A-A'	49-009-20403	WOODS PETROLEUM CORPORATION	ANDERSON 1	Converse	WY	Gamma Ray	Oil/Natural Gas
18	A-A'	49-009-22212	MONCRIEF W A JR	BUCK DRAW 31-1	Converse	WY	Gamma Ray	Oil/Natural Gas
<19>	A-A'	49-009-22213	P & M PETROLEUM MANAGEMENT LLC	POWELL STATE 1-36	Converse	WY	Gamma Ray	Oil/Natural Gas
20	A-A'	49-009-22309	MERIT ENERGY COMPANY	MOORE W-50746 2-3	Converse	WY	Gamma Ray	Oil/Natural Gas
21	A-A'	49-009-21142	MERIT ENERGY COMPANY	MOORE RANCH FED 9947 15-1	Converse	WY	Gamma Ray	Oil/Natural Gas
22	A-A'	49-009-21327	MERIT ENERGY COMPANY	UNIT II W-37080 8	Converse	WY	Gamma Ray	Oil/Natural Gas
23	A-A'	49-009-22605	OSBORN HEIRS COMPANY	FEDERAL E W-14511 1	Converse	WY	Gamma Ray	Oil/Natural Gas
24	A-A'	49-009-21324	WILLIAMS PRODUCTION RMT COMPANY	SPEARHEAD 9	Converse	WY	Gamma Ray	Oil/Natural Gas
25	A-A'	49-009-20520	OSBORN HEIRS COMPANY	FOX FEDERAL A 1	Converse	WY	Gamma Ray	Oil/Natural Gas
26	A-A'	49-009-22911	SOUTHWESTERN PRODUCTION CORPORATION	MOORE STATE 34-36	Converse	WY	Gamma Ray	Oil/Natural Gas
27	A-A'	49-009-21263	WILDFIRE PARTNERS INC	SPEARHEAD RANCH 8	Converse	WY	Gamma Ray	Oil/Natural Gas
<28>	A-A'	49-009-20544	WEXPRO COMPANY	SPEARHEAD RANCH 5	Converse	WY	Gamma Ray	Oil/Natural Gas
1	B-B'	49-005-37360	RIM OPERATING INC	CBM H 13-04	Campbell	WY	Gamma Ray	CBM
2	B-B'	49-005-21963	M & K OIL COMPANY INC	SOUTH HILIGHT UNIT 74-2	Campbell	WY	Resistivity	Oil/Natural Gas
3	B-B'	49-005-37374	RESOLUTE WY INC	CBM H 33-05	Campbell	WY	Gamma Ray	CBM
4	B-B'	49-005-37377	RESOLUTE WY INC	CBM H 13-05	Campbell	WY	Gamma Ray	CBM
5	B-B'	49-005-37370	RESOLUTE WY INC	CBM H 13-06	Campbell	WY	Gamma Ray	CBM
6	B-B'	49-005-22339	M & K OIL COMPANY INC	SOUTH HILIGHT UNIT 79-26	Campbell	WY	Resistivity	Oil/Natural Gas
7	B-B'	49-005-42023	RESOLUTE WY INC	CBM 33-01R	Campbell	WY	Gamma Ray	CBM
8	B-B'	49-005-44739	RESOLUTE WY INC	REVLAND FED TRUST 43-2-4371	Campbell	WY	Gamma Ray	CBM
9	B-B'	49-005-23428	HILLIARD OIL & GAS INC	REVLAND-FEDERAL 2-1	Campbell	WY	Resistivity	Oil/Natural Gas
10	B-B'	49-005-44742	RESOLUTE WY INC	REVLAND FED TRUST 32-2-4371	Campbell	WY	Gamma Ray	CBM
11	B-B'	49-005-44731	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 43-3-4371	Campbell	WY	Gamma Ray	CBM

Appendix 1. Appendix includes the Well Number (tie well indicated by <>); Cross Section where the well is represented; American Petroleum Institute (API)/Well ID number; Operator of the well; Well Name; County; State; Log Type (gamma ray, resistivity, lithologic log (lith-log), and spontaneous potential) used from the well; Well Type (coalbed methane (CBM), oil, natural gas, and coal). A more extensive Appendix in Microsoft Access format is on the CD-ROM that accompanies this report.—Continued

Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
12	B-B'	49-005-44734	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 32-3-4371	Campbell	WY	Gamma Ray	CBM
13	B-B'	49-005-44738	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 12-3-4371	Campbell	WY	Gamma Ray	CBM
14	B-B'	49-005-44727	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 41-4-4371	Campbell	WY	Gamma Ray	CBM
15	B-B'	49-005-44729	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 21-4-4371	Campbell	WY	Gamma Ray	CBM
16	B-B'	49-005-34479	LANCE OIL & GAS COMPANY INC	STUART 13-4	Campbell	WY	Gamma Ray	CBM
17	B-B'	49-005-34485	LANCE OIL & GAS COMPANY INC	STUART 33-5	Campbell	WY	Gamma Ray	CBM
<18>	B-B'	49-005-36462	LANCE OIL & GAS COMPANY INC	STUART 13-5-4371	Campbell	WY	Gamma Ray	CBM
19	B-B'	49-005-36469	LANCE OIL & GAS COMPANY INC	STUART 44-6-4371	Campbell	WY	Gamma Ray	CBM
20	B-B'	49-005-36470	LANCE OIL & GAS COMPANY INC	LEADBETTER 32-7-4371	Campbell	WY	Gamma Ray	CBM
21	B-B'	49-005-33185	LANCE OIL & GAS COMPANY INC	LITTLE THUNDER EDWARD 23-7-4371	Campbell	WY	Gamma Ray	CBM
22	B-B'	49-005-32133	LANCE OIL & GAS COMPANY INC	LITTLE THUNDEREDWARD 13-7	Campbell	WY	Gamma Ray	CBM
23	B-B'	49-005-32134	LANCE OIL & GAS COMPANY INC	LITTLE THUNDEREDWARD 14-7	Campbell	WY	Gamma Ray	CBM
24	B-B'	49-005-48035	LANCE OIL & GAS COMPANY INC	EDWARDS FEDERAL 32-13-4372	Campbell	WY	Gamma Ray	CBM
25	B-B'	49-005-31827	LANCE OIL & GAS COMPANY INC	EDWARDS 1-13	Campbell	WY	Gamma Ray	CBM
26	B-B'	49-005-37510	PETRO-CANADA RESOURCES USA INC	USFS 4372-23-11UW	Campbell	WY	Gamma Ray	CBM
27	B-B'	49-005-23683	DEVON ENERGY PRODUCTION COMPANY LP	C CARLSON 150-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
28	B-B'	49-005-49825	HILCORP ENERGY COMAPNY	COSNER FEDERAL 41-15	Campbell	WY	Gamma Ray	CBM
29	B-B'	49-005-49824	HILCORP ENERGY COMPANY	COSNER FEDERAL 34-15	Campbell	WY	Gamma Ray	CBM
30	B-B'	49-005-33123	DEVON ENERGY PRODUCTION COMPANY LP	HOUSE CREEK UNIT 154-2	Campbell	WY	Gamma Ray	Oil/Natural Gas
31	B-B'	49-005-51666	BILL BARRETT CORPORATION	FEDERAL 41-21-4372	Campbell	WY	Gamma Ray	CBM
32	B-B'	49-005-51658	BILL BARRETT CORPORATION	FEDERAL 43-20-4372	Campbell	WY	Gamma Ray	CBM
33	B-B'	49-005-30414	BLACKJACK OIL INC	COSNER 1-20	Campbell	WY	Gamma Ray	Oil/Natural Gas
34	B-B'	49-005-51620	BILL BARRETT CORPORATION	FEDERAL 14-20-4372C	Campbell	WY	Gamma Ray	CBM
35	B-B'	49-005-46145	YATES PETROLEUM CORPORATION	COSNER CS 7	Campbell	WY	Gamma Ray	CBM
36	B-B'	49-005-39686	YATES PETROLEUM CORPORATION	TED 2	Campbell	WY	Gamma Ray	Oil/Natural Gas
37	B-B'	49-005-39507	YATES PETROLEUM CORPORATION	DALE CS 8	Campbell	WY	Gamma Ray	CBM
38	B-B'	49-005-29105	TRUE OIL LLC	WILLARD 22-22	Campbell	WY	Gamma Ray	Oil/Natural Gas
39	B-B'	49-005-42230	WILLIAMS PRODUCTION RMT COMPANY	GROVES 12-22-4373	Campbell	WY	Gamma Ray	CBM
40	B-B'	49-005-37518	YATES PETROLEUM CORPORATION	BUCKIN BRONC FED 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
41	B-B'	49-005-49501	WILLIAMS PRODUCTION RMT COMPANY	DRAKE FEDERAL 12-19-4373	Campbell	WY	Gamma Ray	CBM
42	B-B'	49-005-49515	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-24-4374	Campbell	WY	Gamma Ray	CBM
43	B-B'	49-005-24835	INEXCO OIL COMPANY	TODD-SKYLAND 1-22	Campbell	WY	Resistivity	Oil/Natural Gas
44	B-B'	49-005-49020	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-22-4374	Campbell	WY	Gamma Ray	CBM
45	B-B'	49-005-24570	INEXCO OIL COMPANY	FEDERAL TODD 1-22	Campbell	WY	Gamma Ray	Oil/Natural Gas
46	B-B'	49-005-49017	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-22-4374	Campbell	WY	Gamma Ray	CBM
47	B-B'	49-005-49013	WILLIAMS PRODUCTION RMT COMPANY	ANCU 32-21-4374	Campbell	WY	Gamma Ray	CBM
48	B-B'	49-005-49787	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-20-4374	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
49	B-B'	49-005-49784	WILLIAMS PRODUCTION RMT COMPANY	ANCU 12-19-4374	Campbell	WY	Gamma Ray	CBM
50	B-B'	49-005-51281	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD 41-24-4375	Campbell	WY	Gamma Ray	CBM
<51>	B-B'	49-005-51280	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD 32-24-4375	Campbell	WY	Gamma Ray	CBM
52	B-B'	49-005-52121	BILL BARRETT CORPORATION	STATE 14-16-4375BG	Campbell	WY	Gamma Ray	CBM
53	B-B'	49-005-49647	ANADARKO PETROLEUM CORPORATION	RUBY 41-20-4375	Campbell	WY	Gamma Ray	CBM
54	B-B'	49-005-58070	ANADARKO PETROLEUM CORPORATION	DRY WILLOW FED 4376 14-14	Campbell	WY	Gamma Ray	CBM
55	B-B'	49-005-40940	YATES PETROLEUM CORPORATION	ROLLING PIN CS STATE 2	Campbell	WY	Gamma Ray	CBM
56	B-B'	49-019-24956	WILLIAMS PROD RMT CO	PAYNE	Johnson	WY	Gamma Ray	CBM
57	B-B'	49-019-23354	WILLIAMS PROD RMT CO	DRY FORK FEDERAL 34-12-4377	Johnson	WY	Gamma Ray	CBM
58	B-B'	49-019-23089	WILLIAMS PRODUCTION RMT COMPANY	JOHNSON 32-11-4377	Johnson	WY	Gamma Ray	CBM
<59>	B-B'	49-019-23405	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK 41-10-4377	Johnson	WY	Gamma Ray	CBM
60	B-B'	49-019-26268	WILLIAMS PROD RMT CO	BCU 41-9-4377	Johnson	WY	Gamma Ray	CBM
61	B-B'	49-019-26262	WILLIAMS PRODUCTION RMT COMPANY	BCU 14-9-4377	Johnson	WY	Gamma Ray	CBM
62	B-B'	49-019-24889	WILLIAMS PRODUCTION RMT COMPANY	BCU DRY FORK 32-17-4377	Johnson	WY	Gamma Ray	CBM
63	B-B'	49-019-26238	WILLIAMS PRODUCTION RMT COMPANY	BCU 12-17-4377	Johnson	WY	Gamma Ray	CBM
64	B-B'	49-019-24885	WILLIAMS PRODUCTION RMT COMPANY	BCU DRY FORK 34-18-4377	Johnson	WY	Gamma Ray	CBM
65	B-B'	49-019-24886	WILLIAMS PRODUCTION RMT COMPANY	BCU DRY FORK 14-18-4377	Johnson	WY	Gamma Ray	CBM
66	B-B'	49-019-24883	WILLIAMS PRODUCTION RMT COMPANY	BCU DRY FORK 12-19-4377	Johnson	WY	Gamma Ray	CBM
67	B-B'	49-019-26269	WILLIAMS PRODUCTION RMT COMPANY	BCU 14-19-4377	Johnson	WY	Gamma Ray	CBM
68	B-B'	49-019-24908	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK 34-13-4378	Johnson	WY	Gamma Ray	CBM
69	B-B'	49-019-26675	NORTH FINN LLC	BIG BEND FEDERAL 7-25	Johnson	WY	Gamma Ray	CBM
70	B-B'	49-019-26679	NORTH FINN LLC	BIG BEND FEDERAL 1-26	Johnson	WY	Gamma Ray	CBM
71	B-B'	49-019-26680	NORTH FINN LLC	BIG BEND FEDERAL 7-26	Johnson	WY	Gamma Ray	CBM
72	B-B'	49-019-26625	NORTH FINN LLC	BIG BEND FEDERAL 5-26	Johnson	WY	Gamma Ray	CBM
73	B-B'	49-019-25930	NORTH FINN LLC	BIG BEND FEDERAL 1-27	Johnson	WY	Gamma Ray	CBM
74	B-B'	49-019-25927	NORTH FINN LLC	BIG BEND FEDERAL 7-27	Johnson	WY	Gamma Ray	CBM
75	B-B'	49-019-25933	NORTH FINN LLC	BIG BEND FEDERAL 11-22	Johnson	WY	Gamma Ray	CBM
76	B-B'	49-019-25928	NORTH FINN LLC	BIG BEND FEDERAL 5-27	Johnson	WY	Gamma Ray	CBM
1	C-C'	49-005-42595	RESOLUTE WY INC	CBM 11-1 C	Campbell	WY	Gamma Ray	CBM
2	C-C'	49-005-42589	RESOLUTE WY INC	CBM 42-2 C	Campbell	WY	Gamma Ray	CBM
3	C-C'	49-005-42956	RESOLUTE WY INC	CBM C 31-2	Campbell	WY	Gamma Ray	CBM
4	C-C'	49-005-42957	RESOLUTE WY INC	CBM C 22-2	Campbell	WY	Gamma Ray	CBM
5	C-C'	49-005-30125	LASMO ENERGY CORPORATION	TWO TOP 1-26	Campbell	WY	Gamma Ray	Oil/Natural Gas

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
6	C-C'	49-005-25566	DAVIS OIL COMPANY	TRC-FEDERAL 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
7	C-C'	49-005-38892	RESOLUTE WY INC	CBM C 41-4	Campbell	WY	Gamma Ray	CBM
8	C-C'	49-005-38898	RESOLUTE WY INC	CBM C 32-4	Campbell	WY	Gamma Ray	CBM
9	C-C'	49-005-38900	RESOLUTE WY INC	CBM C 21-4	Campbell	WY	Gamma Ray	CBM
10	C-C'	49-005-38890	RESOLUTE WY INC	CBM C 12-4	Campbell	WY	Gamma Ray	CBM
11	C-C'	49-005-39110	RESOLUTE WY INC	CBM C 41-5	Campbell	WY	Gamma Ray	CBM
12	C-C'	49-005-45950	LANCE OIL & GAS COMPANY INC	BOLLER MILLS RANCH F 21-5-4471	Campbell	WY	Gamma Ray	CBM
13	C-C'	49-005-45953	LANCE OIL & GAS COMPANY INC	BOLLER MILLS FEDERAL 41-6-4471	Campbell	WY	Gamma Ray	CBM
14	C-C'	49-005-45955	LANCE OIL & GAS COMPANY INC	BOLLER MILLS FEDERAL 32-6-4471	Campbell	WY	Gamma Ray	CBM
15	C-C'	49-005-41007	LANCE OIL & GAS COMPANY INC	BEAVER FED. 34-31-4571	Campbell	WY	Gamma Ray	CBM
16	C-C'	49-005-40783	LANCE OIL & GAS COMPANY INC	DURHAM RANCH STATE 44-36-4572	Campbell	WY	Gamma Ray	CBM
<17>	C-C'	49-005-31363	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 33-36	Campbell	WY	Gamma Ray	CBM
18	C-C'	49-005-26318	COX EDWIN L & BERRY R	DURHAM-FEDERAL 23-12	Campbell	WY	Gamma Ray	Oil/Natural Gas
19	C-C'	49-005-36631	LANCE OIL & GAS COMPANY INC	EAST FORK FEDERAL 12-1	Campbell	WY	Gamma Ray	CBM
20	C-C'	49-005-33115	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 13-36	Campbell	WY	Gamma Ray	CBM
21	C-C'	49-005-45996	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 41-2-4472	Campbell	WY	Gamma Ray	CBM
22	C-C'	49-005-41158	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 41-3-4472	Campbell	WY	Gamma Ray	CBM
23	C-C'	49-005-39242	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 43-34-4572	Campbell	WY	Gamma Ray	CBM
24	C-C'	49-005-46049	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 21-3-4472	Campbell	WY	Gamma Ray	CBM
25	C-C'	49-005-46050	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 12-3-4472	Campbell	WY	Gamma Ray	CBM
26	C-C'	49-005-29727	DEKALB ENERGY COMPANY	FLOCCHINI FEE 13-27	Campbell	WY	Gamma Ray	Oil/Natural Gas
27	C-C'	49-005-47560	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 41-4-4472	Campbell	WY	Gamma Ray	CBM
28	C-C'	49-005-47561	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 32-4-4472	Campbell	WY	Gamma Ray	CBM
29	C-C'	49-005-47562	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 21-4-4472	Campbell	WY	Gamma Ray	CBM
30	C-C'	49-005-47563	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 12-4-4472	Campbell	WY	Gamma Ray	CBM
31	C-C'	49-005-40868	LANCE OIL & GAS COMPANY INC	FULLER RANCH 41-5-4472	Campbell	WY	Gamma Ray	CBM
32	C-C'	49-005-47557	LANCE OIL & GAS COMPANY INC	FULLER FEDERAL 32-5-4472	Campbell	WY	Gamma Ray	CBM
33	C-C'	49-005-47558	LANCE OIL & GAS COMPANY INC	FULLER FEDERAL 21-5-4472	Campbell	WY	Gamma Ray	CBM
34	C-C'	49-005-27789	LOUISIANA LAND & EXPLORATION CO	DURHAM RANCH-FEDERAL 21-32	Campbell	WY	Gamma Ray	Oil/Natural Gas
35	C-C'	49-005-39311	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 14-32-4572	Campbell	WY	Gamma Ray	CBM
36	C-C'	49-005-47554	LANCE OIL & GAS COMPANY INC	FULLER FEDERAL 21-6-4472	Campbell	WY	Gamma Ray	CBM
37	C-C'	49-005-44423	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FED 14-31-4572	Campbell	WY	Gamma Ray	CBM
38	C-C'	49-005-42436	LANCE OIL & GAS COMPANY INC	DURHAM RANCH STATE 34-36-4573	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
39	C-C'	49-005-42430	LANCE OIL & GAS COMPANY INC	DURHAM RANCH STATE 14-36-4573	Campbell	WY	Gamma Ray	CBM
40	C-C'	49-005-44803	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FED 43-35-4573	Campbell	WY	Gamma Ray	CBM
41	C-C'	49-005-29052	TRUE OIL LLC	WRIGHT 34-23	Campbell	WY	Gamma Ray	Oil/Natural Gas
42	C-C'	49-005-44799	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FED 23-35-4573	Campbell	WY	Gamma Ray	CBM
43	C-C'	49-005-44790	LANCE OIL & GAS COMPANY INC	OEDEKOVEN FED 34-34-4573	Campbell	WY	Gamma Ray	CBM
44	C-C'	49-005-44791	LANCE OIL & GAS COMPANY INC	OEDEKOVEN FED 23-34-4573	Campbell	WY	Gamma Ray	CBM
45	C-C'	49-005-40251	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 31-33-4573	Campbell	WY	Gamma Ray	CBM
46	C-C'	49-005-33688	DEVON ENERGY PRODUCTION COMPANY LP	HOUSE CREEK 39-2	Campbell	WY	Gamma Ray	Oil/Natural Gas
47	C-C'	49-005-32815	DEVON ENERGY PRODUCTION COMPANY LP	HOUSE CREEK UNIT 36-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
48	C-C'	49-005-45556	DEVON ENERGY PRODUCTION COMPANY LP	BROWN TRUST 31S-14X	Campbell	WY	Gamma Ray	CBM
49	C-C'	49-005-44229	YATES PETROLEUM CORPORATION	GREASEWOOD CS STATE 11	Campbell	WY	Gamma Ray	CBM
50	C-C'	49-005-23063	INEXCO OIL COMPANY	USA-PRE 12	Campbell	WY	Gamma Ray	Oil/Natural Gas
51	C-C'	49-005-55588	YATES PETROLEUM CORPORATION	ANTLER CS FEDERAL 8	Campbell	WY	Gamma Ray	CBM
52	C-C'	49-005-55587	YATES PETROLEUM CORPORATION	ANTLER CS FEDERAL 7	Campbell	WY	Gamma Ray	CBM
53	C-C'	49-005-55495	EL PASO E&P COMPANY LP	GILBERTZ FEDERAL 14-22H	Campbell	WY	Gamma Ray	Oil/Natural Gas
54	C-C'	49-005-53207	LANCE OIL & GAS COMPANY INC	GEER FED 34-33-4574	Campbell	WY	Gamma Ray	CBM
55	C-C'	49-005-53202	LANCE OIL & GAS COMPANY INC	SAVAGETON FED 43-32-4574	Campbell	WY	Gamma Ray	CBM
56	C-C'	49-005-29891	UNION TEXAS PETROLEUM	BOUNTY JONES 1-29	Campbell	WY	Gamma Ray	Oil/Natural Gas
57	C-C'	49-005-53203	LANCE OIL & GAS COMPANY INC	SAVAGETON FED 34-32-4574	Campbell	WY	Gamma Ray	CBM
58	C-C'	49-005-53204	LANCE OIL & GAS COMPANY INC	SAVAGETON FED 23-32-4574	Campbell	WY	Gamma Ray	CBM
59	C-C'	49-005-53205	LANCE OIL & GAS COMPANY INC	SAVAGETON FED 14-32-4574	Campbell	WY	Gamma Ray	CBM
60	C-C'	49-005-52539	LANCE OIL & GAS COMPANY INC	GROVES 41-1-4475	Campbell	WY	Gamma Ray	CBM
61	C-C'	49-005-52538	LANCE OIL & GAS COMPANY INC	GROVES 32-1-4475	Campbell	WY	Gamma Ray	CBM
62	C-C'	49-005-53277	LANCE OIL & GAS COMPANY INC	STATE 34-36-4575	Campbell	WY	Gamma Ray	CBM
63	C-C'	49-005-53279	LANCE OIL & GAS COMPANY INC	STATE 23-36-4575	Campbell	WY	Gamma Ray	CBM
64	C-C'	49-005-53280	LANCE OIL & GAS COMPANY INC	STATE 14-36-4575	Campbell	WY	Gamma Ray	CBM
65	C-C'	49-005-28807	XTO ENERGY INC	UNIT H.D.U. FEE 0310	Campbell	WY	Gamma Ray	Oil/Natural Gas
66	C-C'	49-005-55016	XTO ENERGY INC	HARTZOG 41-3-4475BG	Campbell	WY	Gamma Ray	CBM
<67>	C-C'	49-005-55033	XTO ENERGY INC	HARTZOG 14-35-4575BG	Campbell	WY	Gamma Ray	CBM
68	C-C'	49-005-26731	XTO ENERGY INC	HDU FEE 5348	Campbell	WY	Gamma Ray	Oil/Natural Gas
69	C-C'	49-005-55035	XTO ENERGY INC	HARTZOG 43-34-4575BG	Campbell	WY	Gamma Ray	CBM
70	C-C'	49-005-30961	XTO ENERGY INC	HARTZOG DRAW UNIT 4601	Campbell	WY	Gamma Ray	Oil/Natural Gas
71	C-C'	49-005-55303	XTO ENERGY INC	HARTZOG FEDERAL 12-34-4575BG	Campbell	WY	Gamma Ray	CBM
72	C-C'	49-005-55581	XTO ENERGY INC	HARTZOG 23-28-4575BG	Campbell	WY	Gamma Ray	CBM
73	C-C'	49-005-55582	XTO ENERGY INC	HARTZOG 23-29-4575BG	Campbell	WY	Gamma Ray	CBM
74	C-C'	49-005-55575	XTO ENERGY INC	HARTZOG FEDERAL 14-29-4575BG	Campbell	WY	Gamma Ray	CBM
75	C-C'	49-005-55764	XTO ENERGY INC	HARTZOG FEDERAL 41-31-4575BG	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
76	C-C'	49-005-55783	XTO ENERGY INC	HARTZOG FEDERAL 32-31-4575BG	Campbell	WY	Gamma Ray	CBM
77	C-C'	49-005-55771	XTO ENERGY INC	HARTZOG FEDERAL 12-31-4575BG	Campbell	WY	Gamma Ray	CBM
78	C-C'	49-005-55769	XTO ENERGY INC	HARTZOG STATE 41-36-4576BG	Campbell	WY	Gamma Ray	CBM
79	C-C'	49-005-54630	XTO ENERGY INC	HARTZOG FEDERAL 34-25-4576BG	Campbell	WY	Gamma Ray	CBM
80	C-C'	49-005-55768	XTO ENERGY INC	HARTZOG STATE 12-36-4576BG	Campbell	WY	Gamma Ray	CBM
81	C-C'	49-005-43090	YATES PETROLEUM CORPORATION	NORTH BUTTE CS STATE 5	Campbell	WY	Gamma Ray	CBM
82	C-C'	49-005-43068	YATES PETROLEUM CORPORATION	NORTH BUTTE CS STATE 4	Campbell	WY	Gamma Ray	CBM
83	C-C'	Fr7				WY		Coal
84	C-C'	49-019-27844	ANADARKO PETROLEUM CORPORA-TION	TM CBM FEE 4477 13-41	Johnson	WY	Gamma Ray	CBM
85	C-C'	49-019-27860	ANADARKO PETROLEUM CORPORATION	TM CBM FEE 4477 13-32	Johnson	WY	Gamma Ray	CBM
86	C-C'	49-019-27464	WINDSOR ENERGY GROUP LLC	FEDERAL KC 43-15-44-77	Johnson	WY	Gamma Ray	CBM
87	C-C'	Fr22			Johnson	WY		Coal
<88>	C-C'	49-019-25908	WINDSOR ENERGY GROUP LLC	STATE-KC 34-16-44-77	Johnson	WY	Gamma Ray	CBM
89	C-C'	49-019-21829	WINDSOR ENERGY GROUP LLC	STATE MW 14-16-44-77	Johnson	WY	Gamma Ray	CBM
90	C-C'	49-019-26394	WINDSOR ENERGY GROUP LLC	STREETER-KC 34-17-44-77	Johnson	WY	Gamma Ray	CBM
91	C-C'	49-019-26398	WINDSOR ENERGY GROUP LLC	STREETER BG-KC 14-17-4477	Johnson	WY	Gamma Ray	CBM
92	C-C'	49-019-25766	BLACK DIAMOND ENERGY INC	MENGEL 41-24-4478 D	Johnson	WY	Gamma Ray	CBM
93	C-C'	49-019-25765	BLACK DIAMOND ENERGY INC	MENGEL 32-24-4478 D	Johnson	WY	Gamma Ray	CBM
94	C-C'	49-019-06034	SWEPI LP	MONTGOMERY 13X-11	Johnson	WY	Gamma Ray	Oil/Natural Gas
95	C-C'	49-019-06211	SWEPI LP	FEDERAL 33X-8	Johnson	WY	Gamma Ray	Oil/Natural Gas
1	D-D'	49-005-51509	RESOLUTE WY INC	CBM A 32-22	Campbell	WY	Gamma Ray	CBM
2	D-D'	49-005-51507	RESOLUTE WY INC	CBM A 12-22	Campbell	WY	Gamma Ray	CBM
3	D-D'	49-005-22063	RIM OPERATING INC	GRADY UNIT 10	Campbell	WY	Resistivity	Oil/Natural Gas
4	D-D'	49-005-32387	RIM OPERATING INC	CBM A 44-16	Campbell	WY	Gamma Ray	CBM
5	D-D'	49-005-21900	RIM OPERATING INC	GRADY UNIT 3	Campbell	WY	Resistivity	Oil/Natural Gas
6	D-D'	49-005-22139	KING RESOURCES ETAL	CHEVRON 1-16	Campbell	WY	Resistivity	Oil/Natural Gas
7	D-D'	49-005-31989	RIM OPERATING INC	CBM A 41-20	Campbell	WY	Gamma Ray	CBM
8	D-D'	49-005-51224	RESOLUTE WY INC	CBM A ANDERSON 44-17	Campbell	WY	Gamma Ray	CBM
9	D-D'	49-005-22273	RESOLUTE WY INC	GRADY UNIT 7-I	Campbell	WY	Resistivity	Oil/Natural Gas
10	D-D'	49-005-30619	CELSIUS ENERGY COMPANY	WAGENSEN 1-29	Campbell	WY	Gamma Ray	Oil/Natural Gas
11	D-D'	49-005-39755	DUNCAN OIL INC	EAGLE 43-19	Campbell	WY	Gamma Ray	CBM
12	D-D'	49-005-34073	LANCE OIL & GAS COMPANY INC	WAGENSEN 42-30-4671	Campbell	WY	Gamma Ray	CBM
13	D-D'	49-005-26709	ENSTAR PETROLEUM INC	WALTERS 7-30	Campbell	WY	Gamma Ray	Oil/Natural Gas
14	D-D'	49-005-32783	LANCE OIL & GAS COMPANY INC	LITTLE BUFFALO 23-30-4671	Campbell	WY	Gamma Ray	CBM
15	D-D'	49-005-40758	WILLIAMS PRODUCTION RMT COMPANY	WILSON 41-25-4672	Campbell	WY	Gamma Ray	CBM
16	D-D'	49-005-40755	WILLIAMS PRODUCTION RMT COMPANY	WILSON 34-24-4672	Campbell	WY	Gamma Ray	CBM
17	D-D'	49-005-22449	WOODS PETROLEUM CORPORATION	NEWTON A 1	Campbell	WY	Resistivity	Oil/Natural Gas

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
18	D-D'	49-005-40756	WILLIAMS PRODUCTION RMT COMPANY	WILSON 14-24-4672	Campbell	WY	Gamma Ray	CBM
<19>	D-D'	49-005-37031	BILL BARRETT CORPORATION	THREEMILE CREEK FED 23-41	Campbell	WY	Gamma Ray	CBM
20	D-D'	49-005-26631	EXXON MOBIL CORPORATION	RATTLESNAKE 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
21	D-D'	49-005-49576	BILL BARRETT CORPORATION	THREE MILE CREEK FED 26-21	Campbell	WY	Gamma Ray	CBM
22	D-D'	49-005-40146	WILLIAMS PRODUCTION RMT COMPANY	DURHAM RANCH 12-26-4672	Campbell	WY	Gamma Ray	CBM
23	D-D'	49-005-41455	MERIT ENERGY COMPANY	WRIGHT CBM 26-1	Campbell	WY	Gamma Ray	CBM
24	D-D'	49-005-29284	MCADAMS ROUX & ASSOCIATES	FEDERAL W-59596 2-35	Campbell	WY	Gamma Ray	Oil/Natural Gas
25	D-D'	49-005-42238	MERIT ENERGY COMPANY	WRIGHT CBM 27-3	Campbell	WY	Gamma Ray	CBM
26	D-D'	49-005-29237	MERIT ENERGY COMPANY	WRIGHT FEE 1-34	Campbell	WY	Gamma Ray	Oil/Natural Gas
27	D-D'	49-005-42479	MERIT ENERGY COMPANY	WRIGHT CBM 27-2	Campbell	WY	Gamma Ray	CBM
28	D-D'	49-005-29602	MERIT ENERGY COMPANY	WIDGE FEE 6-34	Campbell	WY	Gamma Ray	Oil/Natural Gas
29	D-D'	49-005-42237	MERIT ENERGY COMPANY	WRIGHT CBM 27-1	Campbell	WY	Gamma Ray	CBM
30	D-D'	49-005-40141	WILLIAMS PRODUCTION RMT COMPANY	DURHAM RANCH 14-27-4672	Campbell	WY	Gamma Ray	CBM
31	D-D'	49-005-42932	MERIT ENERGY COMPANY	USA CBM 34-1	Campbell	WY	Gamma Ray	CBM
32	D-D'	49-005-40149	WILLIAMS PRODUCTION RMT COMPANY	DURHAM RANCH 41-33-4672	Campbell	WY	Gamma Ray	CBM
33	D-D'	49-005-40148	WILLIAMS PRODUCTION RMT COMPANY	DURHAM RANCH 21-33-4672	Campbell	WY	Gamma Ray	CBM
34	D-D'	49-005-50760	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 44-32-4672C	Campbell	WY	Gamma Ray	CBM
35	D-D'	49-005-50743	WILLIAMS PRODUCTION RMT COMPANY	FLYING T LAND FED 41-32-4672C	Campbell	WY	Gamma Ray	CBM
36	D-D'	49-005-50749	WILLIAMS PRODUCTION RMT COMPANY	FLYING T LAND FED 21-32-4672C	Campbell	WY	Gamma Ray	CBM
37	D-D'	49-005-22375	KENNEDY OIL	G W 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
38	D-D'	49-005-50726	WILLIAMS PRODUCTION RMT COMPANY	FLYING T 41-31-4672C	Campbell	WY	Gamma Ray	CBM
39	D-D'	49-005-50719	WILLIAMS PRODUCTION RMT COMPANY	FLYING T 32-31-4672A	Campbell	WY	Gamma Ray	CBM
40	D-D'	49-005-50724	WILLIAMS PRODUCTION RMT COMPANY	FLYING T 32-31-4672C	Campbell	WY	Gamma Ray	CBM
41	D-D'	49-005-48692	LANCE OIL & GAS COMPANY INC	BAR 76 STATE 41-36-4673A	Campbell	WY	Gamma Ray	CBM
42	D-D'	49-005-43271	LANCE OIL & GAS COMPANY INC	BAR 76 STATE 41-36-4673	Campbell	WY	Gamma Ray	CBM
43	D-D'	49-005-43182	WILLIAMS PRODUCTION RMT COMPANY	OHMAN 34-25-4673	Campbell	WY	Gamma Ray	CBM
44	D-D'	49-005-44841	WILLIAMS PRODUCTION RMT COMPANY	OHMAN FED 41-26-4673	Campbell	WY	Gamma Ray	CBM
45	D-D'	49-005-45078	WILLIAMS PRODUCTION RMT COMPANY	OHMAN FED 21-26-4673	Campbell	WY	Gamma Ray	CBM
46	D-D'	49-005-45073	WILLIAMS PRODUCTION RMT COMPANY	OHMAN FED 14-22-4673	Campbell	WY	Gamma Ray	CBM
47	D-D'	49-005-39467	WILLIAMS PRODUCTION RMT COMPANY	OHMAN 43-21-4673	Campbell	WY	Gamma Ray	CBM
48	D-D'	49-005-39464	WILLIAMS PRODUCTION RMT COMPANY	OHMAN 23-21-4673	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
49	D-D'	49-005-48128	WILLIAMS PRODUCTION RMT COMPANY	OHMAN FEDERAL 12-21-4673	Campbell	WY	Gamma Ray	CBM
50	D-D'	49-005-39452	WILLIAMS PRODUCTION RMT COMPANY	OHMAN 21-20-4673	Campbell	WY	Gamma Ray	CBM
51	D-D'	49-005-45726	WILLIAMS PRODUCTION RMT COMPANY	OHMAN FEDERAL 14-17-4673	Campbell	WY	Gamma Ray	CBM
52	D-D'	49-005-39431	WILLIAMS PRODUCTION RMT COMPANY	WOODS 23-18-4673	Campbell	WY	Gamma Ray	CBM
53	D-D'	49-005-39429	WILLIAMS PRODUCTION RMT COMPANY	SLATER 12-18-4673	Campbell	WY	Gamma Ray	CBM
54	D-D'	49-005-39105	WILLIAMS PRODUCTION RMT COMPANY	WOODS 43-13-4674	Campbell	WY	Gamma Ray	CBM
55	D-D'	49-005-39103	WILLIAMS PRODUCTION RMT COMPANY	MCBETH 34-13-4674	Campbell	WY	Gamma Ray	CBM
56	D-D'	49-005-39113	WILLIAMS PRODUCTION RMT COMPANY	MCBETH 14-13-4674	Campbell	WY	Gamma Ray	CBM
57	D-D'	49-005-38981	WILLIAMS PRODUCTION RMT COMPANY	MCBETH 34-14-4674	Campbell	WY	Gamma Ray	CBM
58	D-D'	49-005-38982	WILLIAMS PRODUCTION RMT COMPANY	RUBY 23-14-4674	Campbell	WY	Gamma Ray	CBM
59	D-D'	49-005-38978	WILLIAMS PRODUCTION RMT COMPANY	RUBY 12-14-4674	Campbell	WY	Gamma Ray	CBM
60	D-D'	49-005-39079	WILLIAMS PRODUCTION RMT COMPANY	PERSSON 41-15-4674	Campbell	WY	Gamma Ray	CBM
61	D-D'	49-005-39081	WILLIAMS PRODUCTION RMT COMPANY	PERSSON 21-15-4674	Campbell	WY	Gamma Ray	CBM
62	D-D'	49-005-41846	PENNACO ENERGY INCORPORATED	MCBETH 1-16-46-74 BG	Campbell	WY	Gamma Ray	CBM
63	D-D'	49-005-42079	PENNACO ENERGY INCORPORATED	MCBETH 3-16-46-74BG	Campbell	WY	Gamma Ray	CBM
64	D-D'	49-005-46329	PENNACO ENERGY INCORPORATED	MCBETH STATE 4-16-46-74 BG	Campbell	WY	Gamma Ray	CBM
65	D-D'	49-005-46160	PENNACO ENERGY INCORPORATED	MCBETH 1-17-46-74WY	Campbell	WY	Gamma Ray	CBM
66	D-D'	49-005-46161	PENNACO ENERGY INCORPORATED	MCBETH 1-17-46-74BG	Campbell	WY	Gamma Ray	CBM
67	D-D'	49-005-44155	PENNACO ENERGY INCORPORATED	MCBETH 11-8-46-74BG	Campbell	WY	Gamma Ray	CBM
68	D-D'	49-005-42887	PENNACO ENERGY INCORPORATED	MCBETH 5-7-46-74 BG	Campbell	WY	Gamma Ray	CBM
69	D-D'	49-005-44156	PENNACO ENERGY INCORPORATED	MCBETH 5-7-46-74WY	Campbell	WY	Gamma Ray	CBM
70	D-D'	49-005-52247	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 34-3	Campbell	WY	Gamma Ray	CBM
71	D-D'	49-005-52257	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 14-3	Campbell	WY	Gamma Ray	CBM
72	D-D'	49-005-52241	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 34-4	Campbell	WY	Gamma Ray	CBM
<73>	D-D'	49-005-52224	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 23-4	Campbell	WY	Gamma Ray	CBM
74	D-D'	49-005-52248	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 12-4	Campbell	WY	Gamma Ray	CBM
75	D-D'	49-005-55385	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 41-5	Campbell	WY	Gamma Ray	CBM
76	D-D'	49-005-55404	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 34-32	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
77	D-D'	49-005-55397	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 21-5	Campbell	WY	Gamma Ray	CBM
78	D-D'	49-005-55396	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 14-32	Campbell	WY	Gamma Ray	CBM
79	D-D'	49-005-55405	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 34-31	Campbell	WY	Gamma Ray	CBM
80	D-D'	49-005-55383	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 23-31	Campbell	WY	Gamma Ray	CBM
81	D-D'	49-005-55395	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 14-31	Campbell	WY	Gamma Ray	CBM
82	D-D'	49-005-50633	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 14-36	Campbell	WY	Gamma Ray	CBM
83	D-D'	49-005-51455	YATES PETROLEUM CORPORATION	RADER CS 1	Campbell	WY	Gamma Ray	CBM
84	D-D'	49-019-25277	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH 34-5-4676	Johnson	WY	Gamma Ray	CBM
85	D-D'	49-019-25174	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH FED 34-6-4676	Johnson	WY	Gamma Ray	CBM
86	D-D'	49-019-24034	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 14-1-4677	Johnson	WY	Gamma Ray	CBM
87	D-D'	49-019-23984	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 21-11-4677	Johnson	WY	Gamma Ray	CBM
88	D-D'	49-019-24030	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 14-2-4677	Johnson	WY	Gamma Ray	CBM
89	D-D'	49-019-24026	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 14-3-4677	Johnson	WY	Gamma Ray	CBM
90	D-D'	49-019-24022	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 14-4-4677	Johnson	WY	Gamma Ray	CBM
91	D-D'	49-019-26757	WILLIAMS PRODUCTION RMT COMPANY	KU 14-5-4677	Johnson	WY	Gamma Ray	CBM
92	D-D'	49-019-25191	WILLIAMS PRODUCTION RMT COMPANY	KU FALXA LAND 34-6-4677	Johnson	WY	Gamma Ray	CBM
93	D-D'	49-019-20393	DAVIS OIL COMPANY	SHAFFER-FEDERAL 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
<94>	D-D'	49-019-26897	HUBER J M CORP	BRUBAKER STATE 13BG-16 46-78	Johnson	WY	Gamma Ray	CBM
95	D-D'	49-019-20721	TRUE OIL LLC	SKILES DRAW UNIT 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
96	D-D'	49-019-06203	HILCORP ENERGY COMPANY	RENO EAST UNIT 11X-26A	Johnson	WY	Gamma Ray	Oil/Natural Gas
97	D-D'	49-019-06253	SWEPI LP	MONTGOMERY 34X-27	Johnson	WY	Gamma Ray	Oil/Natural Gas
98	D"-D"'	49-005-46159	PENNACO ENERGY INCORPORATED	MCBETH 7-17-46-74MWI	Campbell	WY	Gamma Ray	Oil/Natural Gas
99	D"-D"'	49-005-41703	PENNACO ENERGY INCORPORATED	MCBETH 9-18-46-74 WY	Campbell	WY	Gamma Ray	CBM
100	D"-D"'	49-005-41704	PENNACO ENERGY INCORPORATED	MCBETH 15-18-46-74 WY	Campbell	WY	Gamma Ray	CBM
101	D"-D"'	49-005-44184	PENNACO ENERGY INCORPORATED	HOWELL 9-13-46-75WY	Campbell	WY	Gamma Ray	CBM
102	D"-D"'	49-005-44183	PENNACO ENERGY INCORPORATED	HOWELL 15-13-46-75WY	Campbell	WY	Gamma Ray	CBM
103	D"-D"'	49-005-46448	PENNACO ENERGY INCORPORATED	MCBETH 3-24-46-75 BG R	Campbell	WY	Gamma Ray	CBM
104	D"-D"'	49-005-42773	PENNACO ENERGY INCORPORATED	INNES 1-23-46-75 BG	Campbell	WY	Gamma Ray	CBM
105	D"-D"'	49-005-42776	PENNACO ENERGY INCORPORATED	INNES 7-23-46-75 BG	Campbell	WY	Gamma Ray	CBM
106	D"-D"'	49-005-42775	PENNACO ENERGY INCORPORATED	INNES 9-22-46-75 BG	Campbell	WY	Gamma Ray	CBM
<107>	D"-D"'	49-005-42886	PENNACO ENERGYINCORPORATED	INNES 15-22-46-75 BG	Campbell	WY	Gamma Ray	CBM
108	D"-D"'	49-005-50265	PENNACO ENERGY INCORPORATED	INES 9-20-46-75 BG	Campbell	WY	Gamma Ray	CBM
109	D"-D"'	49-005-46569	PENNACO ENERGY INCORPORATED	INNES 13-20-46-75 BG	Campbell	WY	Gamma Ray	CBM
110	D"-D"'	49-005-33399	YATES PETROLEUM CORPORATION	NUT CREEK CS STATE 1	Campbell	WY	Gamma Ray	CBM
111	D"-D"'	49-005-39474	YATES PETROLEUM CORPORATION	NUT CREEK CS STATE 6	Campbell	WY	Gamma Ray	CBM
112	D"-D"'	49-005-33397	YATES PETROLEUM CORPORATION	LONG BENCH CS 1	Campbell	WY	Gamma Ray	CBM
113	D"-D"'	49-005-39789	YATES PETROLEUM CORPORATION	LONG BENCH CS STATE 3	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
114	D"-D"'	49-005-48472	WILLIAMS PRODUCTION RMT COMPANY	WU IBERLIN RANCH 21-26-4676	Campbell	WY	Gamma Ray	CBM
115	D"-D"'	49-005-57431	WILLIAMS PRODUCTION RMT COMPANY	WU 34-22-4676	Campbell	WY	Gamma Ray	CBM
116	D"-D"'	49-005-57423	WILLIAMS PRODUCTION RMT COMPANY	WU 14-22-4676	Campbell	WY	Gamma Ray	CBM
1	E-E'	49-005-41915	ROCKY MOUNTAIN GAC INC.	DUNLAP 6-43-47-71A	Campbell	WY	Gamma Ray	CBM
2	E-E'	49-005-41913	ROCKY MOUNTAIN GAC INC.	DUNLAP 6-33-47-71A	Campbell	WY	Gamma Ray	CBM
3	E-E'	49-005-41907	ROCKY MOUNTAIN GAC INC.	DUNLAP 6-23-74-71A	Campbell	WY	Gamma Ray	CBM
4	E-E'	49-005-42186	ROCKY MOUNTAIN GAC INC.	DUNLAP 6-13-47-71A	Campbell	WY	Gamma Ray	CBM
5	E-E'	49-005-42361	ROCKY MOUNTAIN GAC INC.	DUNLAP 1-43-47-72A	Campbell	WY	Gamma Ray	CBM
6	E-E'	49-005-42388	ROCKY MOUNTAIN GAC INC.	DUNLAP 1-33-47-72A	Campbell	WY	Gamma Ray	CBM
7	E-E'	49-005-42387	ROCKY MOUNTAIN GAC INC.	RAG 1-23-47-72A	Campbell	WY	Gamma Ray	CBM
8	E-E'	49-005-30433	ROCKY MOUNTAIN GAC INC.	MORGAN 1-13	Campbell	WY	Gamma Ray	CBM
9	E-E'	49-005-30610	ROCKY MOUNTAIN GAC INC.	MORGAN 1-12	Campbell	WY	Gamma Ray	CBM
10	E-E'	49-005-40861	LORAL OPERATING LLC	FEDERAL 2-41 47-72	Campbell	WY	Gamma Ray	CBM
11	E-E'	49-005-41484	LORAL OPERATING LLC	RAG 35-44	Campbell	WY	Gamma Ray	CBM
12	E-E'	49-005-30355	LORAL OPERATING LLC	THOMPSON 35-34-48-72	Campbell	WY	Gamma Ray	CBM
13	E-E'	49-005-40891	SUNSHINE VALLEY PETROLEUM	OXBOW 24-35	Campbell	WY	Gamma Ray	CBM
14	E-E'	49-005-28714	PRIMA EXPLORATION INC	LYNDE FEE 3-35	Campbell	WY	Gamma Ray	Oil/Natural Gas
15	E-E'	49-005-40888	SUNSHINE VALLEY PETROLEUM	OXBOW 14-35	Campbell	WY	Gamma Ray	CBM
16	E-E'	49-005-40885	SUNSHINE VALLEY PETROLEUM	OXBOW 44-35	Campbell	WY	Gamma Ray	CBM
17	E-E'	49-005-40858	LORAL OPERATING LLC	FEDERAL 3-31 47-72	Campbell	WY	Gamma Ray	CBM
18	E-E'	49-005-31576	LORAL OPERATING LLC	CABALLO 34-23	Campbell	WY	Gamma Ray	CBM
19	E-E'	49-005-30505	LORAL OPERATING LLC	LYNDE TRUST 33-31	Campbell	WY	Gamma Ray	CBM
<20>	E-E'	49-005-32933	LORAL OPERATING LLC	FEDERAL 32-44 48-72	Campbell	WY	Gamma Ray	CBM
21	E-E'	49-005-35192	LORAL OPERATING LLC	FEDERAL 5-31	Campbell	WY	Gamma Ray	CBM
22	E-E'	49-005-32931	LORAL OPERATING LLC	FEDERAL 32-34-48-7	Campbell	WY	Gamma Ray	CBM
23	E-E'	49-005-35191	LORAL OPERATING LLC	FEDERAL 5-21	Campbell	WY	Gamma Ray	CBM
24	E-E'	49-005-35198	LORAL OPERATING LLC	FEDERAL 5-11	Campbell	WY	Gamma Ray	CBM
25	E-E'	49-005-37060	LORAL OPERATING LLC	LYNDE FEDERAL (JN) 31-P	Campbell	WY	Gamma Ray	CBM
26	E-E'	49-005-37059	LORAL OPERATING LLC	LYNDE FEDERAL (JN) 31-O	Campbell	WY	Gamma Ray	CBM
27	E-E'	49-005-37532	LORAL OPERATING LLC	FEDERAL 6-21-47-72	Campbell	WY	Gamma Ray	CBM
28	E-E'	49-005-37533	LORAL OPERATING LLC	FEDERAL 6-11-47-72	Campbell	WY	Gamma Ray	CBM
29	E-E'	49-005-38321	LORAL OPERATING LLC	RGU TRIPP 1-41-47-73	Campbell	WY	Gamma Ray	CBM
30	E-E'	49-005-32894	YATES PETROLEUM CORPORATION	CABALLO CS STATE 1	Campbell	WY	Gamma Ray	CBM
31	E-E'	49-005-33271	YATES PETROLEUM CORPORATION	CABALLO CS STATE 8	Campbell	WY	Gamma Ray	CBM
32	E-E'	49-005-33819	YATES PETROLEUM CORPORATION	CABALLO CS STATE 15	Campbell	WY	Gamma Ray	CBM
33	E-E'	49-005-33221	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 11-1	Campbell	WY	Gamma Ray	CBM
34	E-E'	49-005-33812	WILLIAMS PRODUCTION RMT COMPANY	NEODYMIUM 44-35	Campbell	WY	Gamma Ray	CBM
35	E-E'	49-005-33811	WILLIAMS PRODUCTION RMT COMPANY	MOLYBDENUM 24-35	Campbell	WY	Gamma Ray	CBM
36	E-E'	49-005-33975	WILLIAMS PRODUCTION RMT COMPANY	MOSER 14-35	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
37	E-E'	49-005-34088	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 34-34-4873	Campbell	WY	Gamma Ray	CBM
38	E-E'	49-005-40782	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 21-3-4773	Campbell	WY	Gamma Ray	CBM
39	E-E'	49-005-33796	HEARTLAND ENERGY COMPANY	RED TIGER 14-34	Campbell	WY	Gamma Ray	CBM
40	E-E'	49-005-34152	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 44-33-4873	Campbell	WY	Gamma Ray	CBM
41	E-E'	49-005-40690	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 34-33-4873	Campbell	WY	Gamma Ray	CBM
42	E-E'	49-005-40689	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 24-33-4873	Campbell	WY	Gamma Ray	CBM
43	E-E'	49-005-40688	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 14-33-4873	Campbell	WY	Gamma Ray	CBM
44	E-E'	49-005-44919	WILLIAMS PRODUCTION RMT COMPANY	HEILAND FEDERAL 44-32-4873	Campbell	WY	Gamma Ray	CBM
45	E-E'	49-005-42764	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 21-5-4773	Campbell	WY	Gamma Ray	CBM
46	E-E'	49-005-42215	WILLIAMS PRODUCTION RMT COMPANY	HEILAND TRUST 11-5-4773	Campbell	WY	Gamma Ray	CBM
47	E-E'	49-005-39663	WILLIAMS PRODUCTION RMT COMPANY	GEER 41-6-4773	Campbell	WY	Gamma Ray	CBM
48	E-E'	49-005-39662	WILLIAMS PRODUCTION RMT COMPANY	GEER 32-6-4773	Campbell	WY	Gamma Ray	CBM
49	E-E'	49-005-39660	WILLIAMS PRODUCTION RMT COMPANY	ROHDE 23-6-4773	Campbell	WY	Gamma Ray	CBM
50	E-E'	49-005-39659	WILLIAMS PRODUCTION RMT COMPANY	ROHDE 14-6-4773	Campbell	WY	Gamma Ray	CBM
51	E-E'	49-005-39664	WILLIAMS PRODUCTION RMT COMPANY	GEER 12-7-4773	Campbell	WY	Gamma Ray	CBM
52	E-E'	45-005-39678	WILLIAMS PRODUCTION RMT COMPANY	GEER 32-12-4774	Campbell	WY	Gamma Ray	CBM
53	E-E'	49-005-40398	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 32-11-4774	Campbell	WY	Gamma Ray	CBM
54	E-E'	49-005-40400	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 21-11-4774	Campbell	WY	Gamma Ray	CBM
55	E-E'	49-005-40442	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 14-2-4774	Campbell	WY	Gamma Ray	CBM
56	E-E'	49-005-40395	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 41-10-4774	Campbell	WY	Gamma Ray	CBM
57	E-E'	49-005-41753	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 32-10-4774	Campbell	WY	Gamma Ray	CBM
58	E-E'	49-005-41426	WILLIAMS PRODUCTION RMT COMPANY	HAYDEN 21-10-4774	Campbell	WY	Gamma Ray	CBM
59	E-E'	49-005-40615	WILLIAMS PRODUCTION RMT COMPANY	NISSELIUS 14-3-4774	Campbell	WY	Gamma Ray	CBM
60	E-E'	49-005-42759	WILLIAMS PRODUCTION RMT COMPANY	NISSELIUS RANCH 43-4-4774	Campbell	WY	Gamma Ray	CBM
61	E-E'	49-005-42448	PENNACO ENERGY INC	MANKIN 1-4-74-74WY	Campbell	WY	Gamma Ray	CBM
62	E-E'	49-005-44409	PENNACO ENERGY INC	MANKIN 2-4-47-74WY	Campbell	WY	Gamma Ray	CBM
63	E-E'	49-005-42442	PENNACO ENERGY INC	MANKIN 15-33-48-74 WY	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
64	E-E'	49-005-42070	PENNACO ENERGY INC	MANKIN 7-33-48-74	Campbell	WY	Gamma Ray	CBM
65	E-E'	49-005-36040	YATES PETROLEUM CORPORATION	NISSELIUS CS FEDERAL 29-34 L	Campbell	WY	Gamma Ray	CBM
66	E-E'	49-005-36038	YATES PETROLEUM CORPORATION	NISSELIUS FEDERAL 29-23 L	Campbell	WY	Gamma Ray	CBM
67	E-E'	49-005-36051	YATES PETROLEUM CORPORATION	NISSELIUS CS FEDERAL 30-43 L	Campbell	WY	Gamma Ray	CBM
68	E-E'	49-005-36018	YATES PETROLEUM CORPORATION	NISSELIUS CS FEDERAL 30-23U	Campbell	WY	Gamma Ray	CBM
69	E-E'	49-005-36069	YATES PETROLEUM CORPORATION	NISSELIUS CS FEDERAL 30-14U	Campbell	WY	Gamma Ray	CBM
70	E-E'	49-005-38134	YATES PETROLEUM CORPORATION	BLUEBIRD CS STATE 7	Campbell	WY	Gamma Ray	CBM
71	E-E'	49-005-38806	YATES PETROLEUM CORPORATION	BLUEBIRD CS STATE 17	Campbell	WY	Gamma Ray	CBM
72	E-E'	49-005-33307	YATES PETROLEUM CORPORATION	BLUEBIRD CS STATE 1	Campbell	WY	Gamma Ray	CBM
73	E-E'	49-005-38802	YATES PETROLEUM CORPORATION	BLUEBIRD CS STATE 21	Campbell	WY	Gamma Ray	CBM
74	E-E'	49-005-38794	YATES PETROLEUM CORPORATION	BLUEBIRD CS STATE 29	Campbell	WY	Gamma Ray	CBM
75	E-E'	49-005-55734	BILL BARRETT CORPORATION	FEDERAL 41-2-4775BG	Campbell	WY	Gamma Ray	CBM
76	E-E'	49-005-52312	BILL BARRETT CORPORATION	NISSELIUS RANCH FEDERAL 21-2-4775BG	Campbell	WY	Gamma Ray	CBM
77	E-E'	49-005-57090	BILL BARRETT CORPORATION	LITTLE BUFFALO FEDERAL 41-4-4775W	Campbell	WY	Gamma Ray	CBM
78	E-E'	49-005-55742	BILL BARRETT CORPORATION	LITTLE BUFFALO FEDERAL 21-4-4775BG	Campbell	WY	Gamma Ray	CBM
<79>	E-E'	49-005-27398	FREMONT ENERGY CORPORATION	FEDERAL 5-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
80	E-E'	49-005-05127	DAVIS OIL COMPANY	FEDERAL-NAPIER 1	Campbell	WY	Resistivity	Oil/Natural Gas
81	E-E'	49-005-33222	YATES PETROLEUM CORPORATION	BOGIE DRAW CS 1	Campbell	WY	Gamma Ray	CBM
82	E-E'	49-005-26616	NORTHERN PRODUCTION COMPANY	CARSON 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
83	E-E'	49-005-55007	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH 21-3-4776	Campbell	WY	Gamma Ray	CBM
84	E-E'	49-005-23585	TEXACO EXPLORATION & PRODUCTION	GOVT-BARLOW C-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
85	E-E'	49-019-25498	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH FEDERAL 21-5-4776	Johnson	WY	Gamma Ray	CBM
86	E-E'	49-019-25532	WILLIAMS PRODUCTION RMT COMPANY	SRU 34-31-4876	Johnson	WY	Gamma Ray	CBM
87	E-E'	49-019-25535	WILLIAMS PRODUCTION RMT COMPANY	SRU 14-31-4876	Johnson	WY	Gamma Ray	CBM
88	E-E'	49-019-21805	WILLIAMS PRODUCTION RMT COMPANY	SRU 22-36-4877	Johnson	WY	Gamma Ray	CBM
89	E-E'	49-019-23710	WILLIAMS PRODUCTION RMT COMPANY	BIG GEORGE UNIT 4877 35-23	Johnson	WY	Gamma Ray	CBM
90	E-E'	49-019-23711	ANADARKO PETROLEUM CORPORATION	BIG GEORGE UNIT 4877 35-32	Johnson	WY	Gamma Ray	CBM
91	E-E'	49-019-26175	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 21-3-4777	Johnson	WY	Gamma Ray	CBM
92	E-E'	49-019-23669	ANADARKO PETROLEUM CORPORATION	BIG GEORGE 4877 33-23	Johnson	WY	Gamma Ray	CBM
93	E-E'	49-019-23675	ANADARKO PETROLEUM CORPORATION	BIG GEORGE 4877 32-23	Johnson	WY	Gamma Ray	CBM
94	E-E'	49-019-24789	ANADARKO PETROLEUM CORPORATION	BIG MIKE UNIT 36-41	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
95	E-E'	49-019-24788	ANADARKO PETROLEUM CORPORATION	BIG MIKE UNIT 36-21	Johnson	WY	Gamma Ray	CBM
96	E-E'	49-019-20303	DAVIS OIL COMPANY	BURNESS-FEDERAL 2	Johnson	WY	Resistivity	Oil/Natural Gas
97	E-E'	49-019-27102	ANADARKO PETROLEUM CORPORATION	BIG MIKE UNIT 4878 27-14	Johnson	WY	Gamma Ray	CBM
98	E-E'	49-019-23842	BILL BARRETT CORPORATION	CAT CREEK FEDERAL 14-28-4878	Johnson	WY	Gamma Ray	CBM
99	E-E'	49-019-20119	RICHARDSON OPERATING CO	INDIAN CREEK II UNIT A 429	Johnson	WY	Resistivity	Oil/Natural Gas
100	E-E'	49-019-23854	BILL BARRETT CORPORATION	CAT CREEK FEDERAL 43-30-4878	Johnson	WY	Gamma Ray	CBM
101	E-E'	49-019-23851	BILL BARRETT CORPORATION	CAT CREEK FEDERAL 32-30-4878	Johnson	WY	Gamma Ray	CBM
102	E-E'	49-019-26718	LANCE OIL & GAS COMPANY INC	FEDERAL 41-25-4879	Johnson	WY	Gamma Ray	CBM
103	E-E'	49-019-22786	LANCE OIL & GAS COMPANY INC	BIG CAT FEDERAL 14-24	Johnson	WY	Gamma Ray	CBM
104	E-E'	49-019-24984	LANCE OIL & GAS COMPANY INC	COULTER FED 23-23-4879	Johnson	WY	Gamma Ray	CBM
105	E-E'	49-019-24987	LANCE OIL & GAS COMPANY INC	FEDERAL 14-23-4879	Johnson	WY	Gamma Ray	CBM
106	E-E'	49-019-24988	LANCE OIL & GAS COMPANY INC	FEDERAL 32-22-4879	Johnson	WY	Gamma Ray	CBM
107	E-E'	49-019-24548	LANCE OIL & GAS COMPANY INC	CAMINO FEDERAL 1222-4879	Johnson	WY	Gamma Ray	CBM
108	E-E'	49-019-24551	LANCE OIL & GAS COMPANY INC	CAMINO FEDERAL 4121-4879	Johnson	WY	Gamma Ray	CBM
<109>	E-E'	49-019-26653	LANCE OIL & GAS COMPANY INC	IBERLIN 23-17-4879BG	Johnson	WY	Gamma Ray	CBM
110	E-E'	49-019-24822	LANCE OIL & GAS COMPANY INC	BIG CAT FEE 4118-4879	Johnson	WY	Gamma Ray	CBM
111	E-E'	49-019-20409	BEARD OIL COMPANY	ESPONDA 1	Johnson	WY	Resistivity	Oil/Natural Gas
1	F-F'	49-005-26635	MAYCO EXPLORATION	ENGDAHL W-36658 23-32	Campbell	WY	Gamma Ray	Oil/Natural Gas
2	F-F'	49-005-28407	MCADAMS ROUX & ASSOCIATES	FEDERAL E-86669 1-31	Campbell	WY	Gamma Ray	Oil/Natural Gas
3	F-F'	49-005-33272	YATES PETROLEUM CORPORATION	SHARP BUTTE CS STATE 1	Campbell	WY	Gamma Ray	CBM
4	F-F'	49-005-25192	TRUE OIL LLC	INGRAM 44-35	Campbell	WY	Gamma Ray	Oil/Natural Gas
5	F-F'	49-005-05272	TRUE OIL LLC	INGRAM 2	Campbell	WY	Resistivity	Oil/Natural Gas
6	F-F'	49-005-25427	ATLANTIC RICHFIELD COMPANY	CHAMBERS W-47984 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
7	F-F'	49-005-49652	L & J OPERATING INC	ROURKE 34-13	Campbell	WY	Gamma Ray	CBM
8	F-F'	49-005-42465	L & J OPERATING INC	ROURKE 33-42	Campbell	WY	Gamma Ray	CBM
9	F-F'	49-005-34227	LORAL OPERATING LLC	ROURKE 4-33-49-71A	Campbell	WY	Gamma Ray	CBM
10	F-F'	49-005-39553	PRB OIL & GAS INC	ROURKE 1-32-49-71	Campbell	WY	Gamma Ray	CBM
11	F-F'	49-005-38867	LORAL OPERATING LLC	ROURKE 4-32-49-71 FMO D	Campbell	WY	Gamma Ray	CBM
12	F-F'	49-005-38874	LORAL OPERATING LLC	ROBBINS 15-30-49-71 CO	Campbell	WY	Gamma Ray	CBM
13	F-F'	49-005-33247	PRB OIL & GAS INC	ROBBINS 13-30-49-71A	Campbell	WY	Gamma Ray	CBM
14	F-F'	49-005-42643	PRB OIL & GAS INC	MILL IRON FEDERAL 16-25-49-72A	Campbell	WY	Gamma Ray	CBM
15	F-F'	49-005-39559	PRB OIL & GAS INC	MILL IRON FEDERAL 11-25-49-72A	Campbell	WY	Gamma Ray	CBM
16	F-F'	49-005-39566	LORAL OPERATING LLC	WOLFF FEDERAL 8-26-49-72A	Campbell	WY	Gamma Ray	CBM
17	F-F'	49-005-39557	LORAL OPERATING LLC	SWANSON FEDERAL 4-26-49-72A	Campbell	WY	Gamma Ray	CBM
18	F-F'	49-005-42650	LORAL OPERATING LLC	MCREERY FEDERAL 15-22-49-72	Campbell	WY	Gamma Ray	CBM
19	F-F'	49-005-42649	LORAL OPERATING LLC	MCREERY FEDERAL 13-22-49-72A	Campbell	WY	Gamma Ray	CBM
20	F-F'	49-005-42665	LORAL OPERATING LLC	MESERVE FED 7-21-49-72A	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
21	F-F'	49-005-42666	LORAL OPERATING LLC	MESERVE FED 5-21-49-72A	Campbell	WY	Gamma Ray	Oil/Natural Gas
22	F-F'	49-005-36607	WILLIAMS PRODUCTION RMT COMPANY	MILNE 23-20-4972	Campbell	WY	Gamma Ray	CBM
23	F-F'	49-005-36605	WILLIAMS PRODUCTION RMT COMPANY	MILNE 43-19-4972	Campbell	WY	Gamma Ray	CBM
24	F-F'	49-005-42606	LORAL OPERATING LLC	MILNE FED 5-19-49-72A	Campbell	WY	Gamma Ray	CBM
<25>	F-F'	49-005-36833	LORAL OPERATING LLC	SWANSONG 1-24-49-73 A	Campbell	WY	Gamma Ray	CBM
26	F-F'	49-005-36816	LORAL OPERATING LLC	SWANSONG 14-13-49-73 A	Campbell	WY	Gamma Ray	CBM
27	F-F'	49-005-36819	LORAL OPERATING LLC	SWANSONG 12-13-49-73 A	Campbell	WY	Gamma Ray	CBM
28	F-F'	49-005-36829	LORAL OPERATING LLC	SWANSONG 9-14-49-73 A	Campbell	WY	Gamma Ray	CBM
29	F-F'	49-005-32763	WILLIAMS PRODUCTION RMT COMPANY	GEER 12-14	Campbell	WY	Gamma Ray	CBM
30	F-F'	49-005-42602	LORAL OPERATING LLC	DOUD FED 1-15-49-73A	Campbell	WY	Gamma Ray	CBM
31	F-F'	49-005-44277	LORAL OPERATING LLC	DOUD FEDERAL 2-15-49-73A	Campbell	WY	Gamma Ray	CBM
32	F-F'	49-005-47120	PATRIOT ENERGY RESOURCES	STONEGATE FED 44-10-4973 WY	Campbell	WY	Gamma Ray	CBM
33	F-F'	49-005-41535	WILLIAMS PRODUCTION RMT COMPANY	GREGERSEN 23-9-4973	Campbell	WY	Gamma Ray	CBM
34	F-F'	49-005-35689	PATRIOT ENERGY RESOURCES	BENNOR FEE 12-9-49-73 WY	Campbell	WY	Gamma Ray	CBM
35	F-F'	49-005-41434	PATRIOT ENERGY RESOURCES	BENNOR FEE 41-8-4973 WY	Campbell	WY	Gamma Ray	CBM
36	F-F'	49-005-35700	PATRIOT ENERGY RESOURCES	BENNOR FEE 34-5-4973 WY	Campbell	WY	Gamma Ray	CBM
37	F-F'	49-005-50235	WILLIAMS PRODUCTION RMT COMPANY	HAIVALA 34-6-4973	Campbell	WY	Gamma Ray	CBM
38	F-F'	49-005-45302	MEDALLION EXPLORATION	LAZY B 6-5	Campbell	WY	Gamma Ray	CBM
39	F-F'	49-005-23009	FERGUSON OIL COMPANY INC	FORCE W-31326 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
40	F-F'	49-005-46774	WILLIAMS PRODUCTION RMT COMPANY	STATE 14-36-5074	Campbell	WY	Gamma Ray	CBM
41	F-F'	49-005-51317	PENNACO ENERGY INC	SUEDKAMP FEDERAL 9-35-50-74A	Campbell	WY	Gamma Ray	CBM
42	F-F'	49-005-51315	PENNACO ENERGY INC	SUEDKAMP FEDERAL 3-35-50-74A	Campbell	WY	Gamma Ray	CBM
43	F-F'	49-005-50514	PENNACO ENERGY INC	KINGSBURY LAND 1-34-50-74 A	Campbell	WY	Gamma Ray	CBM
44	F-F'	49-005-50509	PENNACO ENERGY INC	KINGSBURY LAND 15-27-50-74 A SM/A	Campbell	WY	Gamma Ray	CBM
45	F-F'	49-005-50508	PENNACO ENERGY INC	KINGSBURY LAND 9-28-50-74 A	Campbell	WY	Gamma Ray	CBM
46	F-F'	49-005-51295	PENNACO ENERGY INC	S BAR FED 7-28-50-74 SM/A	Campbell	WY	Gamma Ray	CBM
47	F-F'	49-005-49547	PENNACO ENERGY INC	KINGSBURY LAND 5-28-50-74 A	Campbell	WY	Gamma Ray	CBM
48	F-F'	49-005-54740	PENNACO ENERGY INC	KINGSBURY LAND 15-20-50-74 AWP	Campbell	WY	Gamma Ray	CBM
49	F-F'	49-005-54792	PENNACO ENERGY INC	KINGSBURY LAND 3-29-50-74 WP	Campbell	WY	Gamma Ray	CBM
50	F-F'	49-005-54737	PENNACO ENERGY INC	KINGSBURY LAND 1-30-50-74 AWP	Campbell	WY	Gamma Ray	CBM
51	F-F'	49-005-56084	EMERALD OPERATING COMPANY	WATSABAUGH FEDERAL 14-19-FAW	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
52	F-F'	49-005-56105	WILLIAMS PRODUCTION RMT COMPANY	LOVE L&C 44-24-5075GW	Campbell	WY	Gamma Ray	CBM
53	F-F'	49-005-56165	WILLIAMS PRODUCTION RMT COMPANY	KINGSBURY LAND 21-25-5075GW	Campbell	WY	Gamma Ray	CBM
54	F-F'	49-005-55691	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK 41-26-5075GW	Campbell	WY	Gamma Ray	CBM
55	F-F'	49-005-54823	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK 32-26-5075GW	Campbell	WY	Gamma Ray	CBM
56	F-F'	49-005-58317	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK FED 43-27-5075GW	Campbell	WY	Gamma Ray	CBM
57	F-F'	49-005-58298	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK FED 14-27-5075GW	Campbell	WY	Gamma Ray	CBM
58	F-F'	49-005-55486	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK FED 34-28-5075GW	Campbell	WY	Gamma Ray	CBM
59	F-F'	49-005-58325	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK FED 14-28-5075GW	Campbell	WY	Gamma Ray	CBM
60	F-F'	49-005-54851	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK 34-29-5075GW	Campbell	WY	Gamma Ray	CBM
61	F-F'	49-005-59642	WILLIAMS PRODUCTION RMT COMPANY	CARU 42-30-5075BG	Campbell	WY	Gamma Ray	CBM
62	F-F'	49-005-52989	WILLIAMS PRODUCTION RMT COMPANY	CARU STATE 41-36-5076GW	Campbell	WY	Gamma Ray	CBM
63	F-F'	49-005-52987	WILLIAMS PRODUCTION RMT COMPANY	CARU STATE 21-36-5076GW	Campbell	WY	Gamma Ray	CBM
64	F-F'	49-005-52991	WILLIAMS PRODUCTION RMT COMPANY	CARU STATE 32-36-5076GW	Campbell	WY	Gamma Ray	CBM
65	F-F'	49-005-51156	WILLIAMS PRODUCTION RMT COMPANY	J REDCORD 21-2-4976GW	Campbell	WY	Gamma Ray	CBM
66	F-F'	49-005-52267	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 23-3-4976GW	Campbell	WY	Gamma Ray	CBM
<67>	F-F'	49-005-51122	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 23-3-4976BG	Campbell	WY	Gamma Ray	CBM
68	F-F'	49-019-20652	RANCH OIL COMPANY	BARBER CREEK W-71863 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
69	F-F'	49-019-21154	WILLIAMS PRODUCTION RMT COMPANY	WILLIAMS DRAW UNIT 33-36	Johnson	WY	Gamma Ray	CBM
70	F-F'	49-019-21645	LANCE OIL & GAS COMPANY INC	PVU 22-28-5077	Johnson	WY	Gamma Ray	CBM
71	F-F'	49-019-24940	LANCE OIL & GAS COMPANY INC	WILLIAMS DU 23-23-5077	Johnson	WY	Gamma Ray	CBM
72	F-F'	49-019-24944	LANCE OIL & GAS COMPANY INC	WILLIAMS DU 14-23-5077WR	Johnson	WY	Gamma Ray	CBM
73	F-F'	49-019-24937	LANCE OIL & GAS COMPANY INC	WILLIAMS DU 34-22-5077WR	Johnson	WY	Gamma Ray	CBM
74	F-F'	49-019-22847	LANCE OIL & GAS COMPANY INC	PVU 31-28-5077	Johnson	WY	Gamma Ray	CBM
75	F-F'	49-019-22848	LANCE OIL & GAS COMPANY INC	PVU 42-28-5077	Johnson	WY	Gamma Ray	CBM
76	F-F'	49-019-21788	LANCE OIL & GAS COMPANY INC	PVU 13-28-5077	Johnson	WY	Gamma Ray	CBM
77	F-F'	49-019-21651	LANCE OIL & GAS COMPANY INC	PVU 44-29-5077	Johnson	WY	Gamma Ray	CBM
78	F-F'	49-019-21652	LANCE OIL & GAS COMPANY INC	PVU 31-32-5077	Johnson	WY	Gamma Ray	Oil/Natural Gas
79	F-F'	49-019-23025	LANCE OIL & GAS COMPANY INC	PVU FED 11-32-5077	Johnson	WY	Gamma Ray	CBM
80	F-F'	49-019-24782	LANCE OIL & GAS COMPANY INC	PVU FED 22-31-5077BG	Johnson	WY	Gamma Ray	CBM
81	F-F'	49-019-24227	LANCE OIL & GAS COMPANY INC	PVU FED 44-25-5078	Johnson	WY	Gamma Ray	CBM
82	F-F'	49-019-23030	LANCE OIL & GAS COMPANY INC	PVU FED 24-25-5078	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
83	F-F'	49-019-27727	YATES PETROLEUM CORPORATION	FLYING CS FEDERAL 4	Johnson	WY	Gamma Ray	CBM
84	F-F'	49-019-27733	YATES PETROLEUM CORPORATION	FLYING CS FEDERAL 3	Johnson	WY	Gamma Ray	CBM
85	F-F'	49-019-27696	YATES PETROLEUM CORPORATION	FLYING CS FEDERAL 10	Johnson	WY	Gamma Ray	CBM
86	F-F'	49-019-27722	YATES PETROLEUM CORPORATION	SKYWARD CS FEDERAL 3	Johnson	WY	Gamma Ray	CBM
87	F-F'	49-019-27721	YATES PETROLEUM CORPORATION	SKYWARD CS FED COM 2	Johnson	WY	Gamma Ray	CBM
88	F-F'	49-019-23636	LANCE OIL & GAS COMPANY INC	CRAZY WOMAN FED 1417-5078	Johnson	WY	Gamma Ray	CBM
89	F-F'	49-019-23638	LANCE OIL & GAS COMPANY INC	CRAZY WOMAN FED 3418-5078	Johnson	WY	Gamma Ray	CBM
90	F-F'	49-019-23632	LANCE OIL & GAS COMPANY INC	CRAZY WOMAN FED 1418-5078	Johnson	WY	Gamma Ray	CBM
91	F-F'	49-019-26162	LANCE OIL & GAS COMPANY INC	BDU FED 34-13-5079BG	Johnson	WY	Gamma Ray	CBM
92	F-F'	49-019-26166	LANCE OIL & GAS COMPANY INC	BDU FED 14-13-5079BG	Johnson	WY	Gamma Ray	CBM
93	F-F'	49-019-26156	LANCE OIL & GAS COMPANY INC	BDU FED 24-14-5079BG	Johnson	WY	Gamma Ray	CBM
94	F-F'	49-019-26146	LANCE OIL & GAS COMPANY INC	BDU FED 33-15-5079BG	Johnson	WY	Gamma Ray	CBM
95	F-F'	49-019-26150	LANCE OIL & GAS COMPANY INC	BDU FED 24-15-5079BG	Johnson	WY	Gamma Ray	CBM
96	F-F'	49-019-27352	LANCE OIL & GAS COMPANY INC	TEAR DROP FED 32-21-5079	Johnson	WY	Gamma Ray	CBM
97	F-F'	49-019-20596	BASS ENTERPRISES PRODUCTION CO	BASS ANSCHUTZ FED 21-23	Johnson	WY	Gamma Ray	Oil/Natural Gas
98	F-F'	49-019-22652	CNX GAS COMPANY	PINE GULCH 25-21	Johnson	WY	Gamma Ray	CBM
99	F-F'	49-019-26737	PAUPERS DREAM COMPANY	ESPONDA 4980-10-13	Johnson	WY	Gamma Ray	CBM
<100>	F-F'	49-019-26740	PAUPERS DREAM COMPANY	STATE 4980-16-1	Johnson	WY	Gamma Ray	CBM
101	F-F'	49-019-26745	PAUPERS DREAM COMPANY	STATE 4980-16-3	Johnson	WY	Gamma Ray	CBM
102	F-F'	49-019-26744	PAUPERS DREAM COMPANY	STATE 4980-16-5	Johnson	WY	Gamma Ray	CBM
103	F-F'	49-019-22101	FIDELITY EXPLORATION & PRODUCTION	SPENCE STATE 12BC-1691	Johnson	WY	Gamma Ray	CBM
1	G-G'	68C-29	USGS		Campbell	WY	Lith-Log	Coal
2	G-G'	Us-7455	USGS		Campbell	WY	Lith-Log	Coal
3	G-G'	49-005-35537	LORAL OPERATING LLC	STEINHOFFEL 1-12-49-72	Campbell	WY	Gamma Ray	CBM
4	G-G'	49-005-35542	PENNACO ENERGY INC	STEINHOFFEL 10-12-49-72	Campbell	WY	Gamma Ray	CBM
5	G-G'	49-005-38999	LORAL OPERATING LLC	WOLFF 4-13-49-72A	Campbell	WY	Gamma Ray	CBM
6	G-G'	49-005-35438	LORAL OPERATING LLC	ROBBINS 9-14-49-72A	Campbell	WY	Gamma Ray	CBM
7	G-G'	49-005-39562	LORAL OPERATING LLC	MILL IRON FEDERAL 15-14-49-72A	Campbell	WY	Gamma Ray	CBM
8	G-G'	49-005-34827	CITATION OIL & GAS COPRORATION	MESERVE 33-15	Campbell	WY	Gamma Ray	CBM
9	G-G'	49-005-35433	LORAL OPERATING LLC	STATE WY 9-16-49-72A	Campbell	WY	Gamma Ray	CBM
10	G-G'	49-005-36622	WILLIAMS PRODUCTION RMT COMPANY	MILNE 43-17-4972	Campbell	WY	Gamma Ray	CBM
11	G-G'	49-0053-9484	WILLIAMS PRODUCTION RMT COMPANY	MILNE 43-18-4972	Campbell	WY	Gamma Ray	CBM
12	G-G'	49-005-37905	LORAL OPERATING LLC	SWANSONG 12-18-49-72 A	Campbell	WY	Gamma Ray	CBM
<13>	G-G'	49-005-48160	WILLIAMS PRODUCTION RMT COMPANY	SWANSONG RANCH FED 43-13-4973	Campbell	WY	Gamma Ray	CBM
14	G-G'	49-005-36819	LORAL OPERATING LLC	SWANSONG 12-13-49-73 A	Campbell	WY	Gamma Ray	CBM
15	G-G'	49-005-42492	WILLIAMS PRODUCTION RMT COMPANY	GEER 32-14	Campbell	WY	Gamma Ray	CBM
16	G-G'	49-005-44281	LORAL OPERATING LLC	DOUD FEDERAL 8-15-49-73A	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
17	G-G'	49-005-43270	WILLIAMS PRODUCTION RMT COMPANY	EDNA STATE 41-16-4973	Campbell	WY	Gamma Ray	CBM
18	G-G'	49-005-41535	WILLIAMS PRODUCTION RMT COMPANY	GREGERSEN 23-9-4973	Campbell	WY	Gamma Ray	CBM
19	G-G'	49-005-49691	WILLIAMS PRODUCTION RMT COMPANY	MOUNTAIN VIEW 21-8-4973	Campbell	WY	Gamma Ray	CBM
20	G-G'	49-005-54112	WILLIAMS PRODUCTION RMT COMPANY	HAIVALA FED 23-6-4973	Campbell	WY	Gamma Ray	CBM
21	G-G'	49-005-46939	WILLIAMS PRODUCTION RMT COMPANY	MACKEY TRUST 41-2-4974	Campbell	WY	Gamma Ray	CBM
22	G-G'	49-005-46942	WILLIAMS PRODUCTION RMT COMPANY	MACKEY TRUST 41-3-4974	Campbell	WY	Gamma Ray	CBM
23	G-G'	49-005-51306	PENNACO ENERGY INC	KINGSBURY LAND FED 7-33-50-74A	Campbell	WY	Gamma Ray	CBM
24	G-G'	49-005-35148	WILLIAMS PRODUCTION RMT COMPANY	WILLIAMS PRODUCTION RMT COMPANY	Campbell	WY	Gamma Ray	CBM
25	G-G'	49-005-54932	WILLIAMS PRODUCTION RMT COMPANY	J MAYCOCK FED 21-2-4975 GW	Campbell	WY	Gamma Ray	CBM
26	G-G'	49-005-54825	WILLIAMS PRODUCTION RMT COMPANY	M MAYCOCK 21-33-5075GW	Campbell	WY	Gamma Ray	CBM
27	G-G'	49-005-55690	WILLIAMS PRODUCTION RMT COMPANY	M E JONES 23-32-5075GW	Campbell	WY	Gamma Ray	CBM
28	G-G'	49-005-52988	WILLIAMS PRODUCTION RMT COMPANY	CARU STATE 43-36-5076GW	Campbell	WY	Gamma Ray	CBM
29	G-G'	49-005-52265	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 34-2-4976GW	Campbell	WY	Gamma Ray	CBM
30	G-G'	49-005-50268	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 23-2-4976GW	Campbell	WY	Gamma Ray	CBM
31	G-G'	49-005-52271	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 41-10-4976GW	Campbell	WY	Gamma Ray	CBM
<32>	G-G'	49-005-51177	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 32-10-4976BG	Campbell	WY	Gamma Ray	CBM
33	G-G'	49-019-21154	WILLIAMS PRODUCTION RMT COMPANY	WILLIAMS DRAW UNIT 33-36	Johnson	WY	Gamma Ray	CBM
34	G-G'	49-019-21645	LANCE OIL & GAS COMPANY INC	PVU 22-28-5077	Johnson	WY	Gamma Ray	CBM
35	G-G'	49-019-23015	LANCE OIL & GAS COMPANY INC	PVU FED 31-29-5077	Johnson	WY	Gamma Ray	CBM
36	G-G'	49-019-23020	LANCE OIL & GAS COMPANY INC	PVU FED 31-30-5077	Johnson	WY	Gamma Ray	CBM
1	H-H'	49-005-46628	MEDALLION EXPLORATION	WINGS 11-20	Campbell	WY	Gamma Ray	CBM
2	H-H'	49-005-37988	ROCKY MOUNTAIN GAC INC.	ECHO 12-20 A	Campbell	WY	Gamma Ray	CBM
<3>	H-H'	49-005-37989	ROCKY MOUNTAIN GAC INC.	ECHO 9-19-A	Campbell	WY	Gamma Ray	CBM
4	H-H'	49-005-30031	ROCKY MOUNTAIN GAC INC.	ECHO 15-19	Campbell	WY	Gamma Ray	CBM
5	H-H'	49-005-30032	ROCKY MOUNTAIN GAC INC.	RAWHIDE FEE 14-19	Campbell	WY	Gamma Ray	CBM
6	H-H'	49-005-45273	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 14A-1912	Campbell	WY	Gamma Ray	CBM
7	H-H'	49-005-37690	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 43C-2413	Campbell	WY	Gamma Ray	CBM
8	H-H'	49-005-43720	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 34C-2413	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
9	H-H'	49-005-37686	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 23C-2413	Campbell	WY	Gamma Ray	CBM
10	H-H'	49-005-37687	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 14C-2413	Campbell	WY	Gamma Ray	CBM
11	H-H'	49-0053-7324	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 43C-2313	Campbell	WY	Gamma Ray	CBM
12	H-H'	49-005-23575	DAVIS OIL COMPANY	MUDGE-FEDERAL 1	Campbell	WY	Resistivity	Oil/Natural Gas
13	H-H'	49-005-37323	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 34C-2313	Campbell	WY	Gamma Ray	CBM
14	H-H'	49-005-37748	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 23C-2313	Campbell	WY	Gamma Ray	CBM
15	H-H'	49-005-34265	DEVON ENERGY PRODUCTION COMPANY	20 MILE 14C-2313	Campbell	WY	Gamma Ray	CBM
16	H-H'	49-005-22808	DAVIS OIL COMPANY	DALY 7	Campbell	WY	Resistivity	Oil/Natural Gas
17	H-H'	49-005-40311	DEVON ENERGY PRODUCTION COMPANY	20 MILE 41C-2713	Campbell	WY	Gamma Ray	CBM
18	H-H'	49-005-21182	DAVIS OIL COMPANY	DALY 5	Campbell	WY	Resistivity	Oil/Natural Gas
19	H-H'	49-005-34258	DEVON ENERGY PRODUCTION COMPANY	20 MILE 34C-2213	Campbell	WY	Gamma Ray	CBM
20	H-H'	49-005-35571	PURE PETROLEUM LLC	OSTLUND 14-22-51-73A	Campbell	WY	Gamma Ray	CBM
21	H-H'	49-005-44261	PURE PETROLEUM LLC	20 MILE FEDERAL 13-22-51-73CY	Campbell	WY	Gamma Ray	CBM
22	H-H'	49-005-44871	PATRIOT ENERGY RESOURCES	20 MILE FEDERAL 44-21-5173 CA	Campbell	WY	Gamma Ray	CBM
23	H-H'	49-005-20809	KENNEDY OIL	DALY ETAL 21-3	Campbell	WY	Gamma Ray	Oil/Natural Gas
24	H-H'	49-005-48102	PATRIOT ENERGY RESOURCES	20 MILE FEDERAL 33-21-5173 MO	Campbell	WY	Gamma Ray	CBM
25	H-H'	49-005-44870	PATRIOT ENERGY RESOURCES	20 MILE FEDERAL 24-21-5173 CA	Campbell	WY	Gamma Ray	CBM
26	H-H'	49-005-48103	PATRIOT ENERGY RESOURCES	TWENTY MILE FEE 13-21-5173 MO	Campbell	WY	Gamma Ray	CBM
27	H-H'	49-005-48100	PATRIOT ENERGY RESOURCES	TWENTY MILE FEE 42-20-5173 MO	Campbell	WY	Gamma Ray	CBM
28	H-H'	49-005-48823	KENNEDY OIL	KITTY DANNAR FEE 33-20 D	Campbell	WY	Gamma Ray	CBM
29	H-H'	49-005-46445	PATRIOT ENERGY RESOURCES	TWENTY MILE STATE 24-20-5173CA	Campbell	WY	Gamma Ray	CBM
30	H-H'	49-005-46205	PATRIOT ENERGY RESOURCES	TWENTY MILE FED 13-20-5173 SM	Campbell	WY	Gamma Ray	CBM
31	H-H'	49-005-47287	PATRIOT ENERGY RESOURCES	TWENTY MILE FED 42-19-5173 SM	Campbell	WY	Gamma Ray	CBM
32	H-H'	49-005-47282	PATRIOT ENERGY RESOURCES	TWENTY MILE FED 31-19-5173CA	Campbell	WY	Gamma Ray	CBM
33	H-H'	49-005-44579	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 22C-1913	Campbell	WY	Gamma Ray	CBM
34	H-H'	49-005-44578	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 13C-1913	Campbell	WY	Gamma Ray	CBM
35	H-H'	49-005-20286	ATLANTIC RICHFIELD COMPANY	MARY HERMAN-FEDERAL 1	Campbell	WY	Resistivity	Oil/Natural Gas
36	H-H'	49-005-43788	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 43C-2414	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
37	H-H'	49-005-43789	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 34C-2414	Campbell	WY	Gamma Ray	CBM
38	H-H'	49-005-43728	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 23A-2414	Campbell	WY	Gamma Ray	CBM
39	H-H'	49-005-34917	DEVON ENERGY PRODUCTION COMPANY	20 MILE 14A-2414	Campbell	WY	Gamma Ray	CBM
40	H-H'	49-005-34918	DEVON ENERGY PRODUCTION COMPANY	20 MILE 43A-2314	Campbell	WY	Gamma Ray	CBM
41	H-H'	49-005-34921	DEVON ENERGY PRODUCTION COMPANY	20 MILE 34A-2314	Campbell	WY	Gamma Ray	CBM
42	H-H'	49-005-34920	DEVON ENERGY PRODUCTION COMPANY	20 MILE 23A-2314	Campbell	WY	Gamma Ray	CBM
43	H-H'	49-005-43751	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 14A-2314	Campbell	WY	Gamma Ray	CBM
44	H-H'	49-005-43752	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 43A-2214	Campbell	WY	Gamma Ray	CBM
45	H-H'	49-005-43756	DEVON ENERGY PRODUCTION COMPANY	20 MILE FEDERAL 32A-2214	Campbell	WY	Gamma Ray	CBM
46	H-H'	49-005-43765	DEVON ENERGY PRODUCTION COMPANY	FEDERAL (DALY) 12A-2214	Campbell	WY	Gamma Ray	CBM
47	H-H'	49-005-37409	PENNACO ENERGY INC	FEDERAL 7-21-51-74A	Campbell	WY	Gamma Ray	CBM
48	H-H'	49-005-37407	PENNACO ENERGY INC	TWENTY MILE FEDERAL 5-21-51-74A	Campbell	WY	Gamma Ray	CBM
49	H-H'	49-005-39446	PENNACO ENERGY INC	TWENTY MILE 8-20-51-74A	Campbell	WY	Gamma Ray	CBM
50	H-H'	49-005-39450	PENNACO ENERGY INC	TWENTY MILE 7-20-51-74A	Campbell	WY	Gamma Ray	CBM
51	H-H'	49-005-37408	PENNACO ENERGY INC	TWENTY MILE FEDERAL 6-21-51-74A	Campbell	WY	Gamma Ray	CBM
52	H-H'	49-005-35923	PENNACO ENERGY INC	FLOYD 7-19-51-74SMACY	Campbell	WY	Gamma Ray	CBM
53	H-H'	49-005-35921	PENNACO ENERGY INC	FLOYD 5-19-51-74 SM	Campbell	WY	Gamma Ray	CBM
54	H-H'	49-005-51911	PETRO-CANADA RESOURCES USA INC	FLOYD FED 5175-24-13WA	Campbell	WY	Gamma Ray	CBM
55	H-H'	49-005-52171	PETRO-CANADA RESOURCES USA INC	FED 5175-24-21CO	Campbell	WY	Gamma Ray	CBM
56	H-H'	49-005-51993	PETRO-CANADA RESOURCES USA INC	MOONEY FED 5175-23-13WA	Campbell	WY	Gamma Ray	CBM
57	H-H'	49-005-51973	PETRO-CANADA RESOURCES USA INC	FLOYD FED 5175-23-23WA	Campbell	WY	Gamma Ray	CBM
58	H-H'	49-005-57405	PETRO-CANADA RESOURCES USA INC	HAYDEN 5175-22-21WA	Campbell	WY	Gamma Ray	CBM
59	H-H'	49-005-51187	PETRO-CANADA RESOURCES USA INC	ST 5175-16-43WA	Campbell	WY	Gamma Ray	CBM
60	H-H'	49-005-51191	PETRO-CANADA RESOURCES USA INC	ST 5175-16-33WA	Campbell	WY	Gamma Ray	CBM
61	H-H'	49-005-56982	LANCE OIL & GAS COMPANY INC	CAMP JOHN STATE 21-29-5175WA	Campbell	WY	Gamma Ray	CBM
62	H-H'	49-005-27219	ANDERSON MANAGEMENT COMPANY	USA BERTOLET C-84920 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
63	H-H'	49-005-27489	DAVIS OIL COMPANY	GALEY-FEDERAL 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
64	H-H'	49-005-53451	LANCE OIL & GAS COMPANY INC	CAMP JOHN STATE 21-25-5176WA	Campbell	WY	Gamma Ray	CBM
65	H-H'	49-005-53452	LANCE OIL & GAS COMPANY INC	CAMP JOHN STATE 41-26-5176WA	Campbell	WY	Gamma Ray	CBM
66	H-H'	49-005-53510	LANCE OIL & GAS COMPANY INC	CAMP JOHN FED 21-26-5176WA	Campbell	WY	Gamma Ray	CBM
67	H-H'	49-005-53503	LANCE OIL & GAS COMPANY INC	AUGUSTA FED 41-27-5176BG	Campbell	WY	Gamma Ray	CBM
68	H-H'	49-005-53499	LANCE OIL & GAS COMPANY INC	AUGUSTA FED 12-27-5176BG	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
69	H-H'	49-005-57607	LANCE OIL & GAS COMPANY INC	AUGUSTA 43-28-5176WA	Campbell	WY	Gamma Ray	CBM
<70>	H-H'	49-019-27587	LANCE OIL & GAS COMPANY INC	AUGUSTA 43-29-5176WA	Johnson	WY	Gamma Ray	CBM
71	H-H'	49-019-27598	LANCE OIL & GAS COMPANY INC	AUGUSTA 34-29-5176BG	Johnson	WY	Gamma Ray	CBM
72	H-H'	49-019-06125	COSDEN PETROLEUM	GOVT 1	Johnson	WY	Resistivity	Oil/Natural Gas
73	H-H'	49-019-27369	LANCE OIL & GAS COMPANY INC	AUGUSTA 14-30-5176WA	Johnson	WY	Gamma Ray	CBM
74	H-H'	49-019-06126	BREUER & CURRAN OIL COMPANY	GOVT-DIXION 1	Johnson	WY	Resistivity	Oil/Natural Gas
75	H-H'	49-019-20077	SUN OIL	R MEANS FEDERAL 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
76	H-H'	49-019-24803	LANCE OIL & GAS COMPANY INC	WILLIAMS DU 41-10-5077BG	Johnson	WY	Gamma Ray	CBM
77	H-H'	49-019-24800	LANCE OIL & GAS COMPANY INC	WILLIAMS DU 21-10-5077BG	Johnson	WY	Gamma Ray	CBM
78	H-H'	49-019-23444	LANCE OIL & GAS COMPANY INC	PVU 42-9-5077	Johnson	WY	Gamma Ray	CBM
79	H-H'	49-019-24252	LANCE OIL & GAS COMPANY INC	PVU FED 11-9-5077WR	Johnson	WY	Gamma Ray	CBM
80	H-H'	49-019-23432	LANCE OIL & GAS COMPANY INC	PVU 31-8-5077	Johnson	WY	Gamma Ray	CBM
81	H-H'	49-019-23002	LANCE OIL & GAS COMPANY INC	KDU FED 14-5-5077	Johnson	WY	Gamma Ray	CBM
82	H-H'	49-019-22609	LANCE OIL & GAS COMPANY INC	KDU FED 43-6-5077	Johnson	WY	Gamma Ray	CBM
83	H-H'	49-019-24169	LANCE OIL & GAS COMPANY INC	KDU FED 11-6-5077BG	Johnson	WY	Gamma Ray	CBM
84	H-H'	49-019-22784	LANCE OIL & GAS COMPANY INC	CGU STATE 23-36-5178	Johnson	WY	Gamma Ray	CBM
85	H-H'	49-019-24209	LANCE OIL & GAS COMPANY INC	CGU FED 14-26-5178WA	Johnson	WY	Gamma Ray	Oil/Natural Gas
86	H-H'	49-019-24214	LANCE OIL & GAS COMPANY INC	COAL GULTCH UNIT 34-27-5178	Johnson	WY	Gamma Ray	CBM
87	H-H'	49-019-24210	LANCE OIL & GAS COMPANY INC	CGU FED 13-27-5178	Johnson	WY	Gamma Ray	CBM
88	H-H'	49-019-26483	LANCE OIL & GAS COMPANY INC	CGU FED 43-32-5178BG	Johnson	WY	Gamma Ray	CBM
89	H-H'	49-019-26493	LANCE OIL & GAS COMPANY INC	CGU 14-32-5178BG	Johnson	WY	Gamma Ray	CBM
90	H-H'	49-019-26495	LANCE OIL & GAS COMPANY INC	CGU 43-31-5178BG	Johnson	WY	Gamma Ray	CBM
91	H-H'	49-019-26489	LANCE OIL & GAS COMPANY INC	CGU FED 14-31-5178BG	Johnson	WY	Gamma Ray	CBM
92	H-H'	49-019-25850	LANCE OIL & GAS COMPANY INC	BDU STATE 23-36-5179BG	Johnson	WY	Gamma Ray	CBM
93	H-H'	49-019-27061	LANCE OIL & GAS COMPANY INC	QUARTER CIRCLE 9 FED 34-35-5179	Johnson	WY	Gamma Ray	CBM
94	H-H'	49-019-26960	BLACK DIAMOND ENERGY INC	SCHUMAN 21-34-5179	Johnson	WY	Gamma Ray	CBM
95	H-H'	49-019-25130	BLACK DIAMOND ENERGY INC	FEDERAL (CHRISTIAN) 23-28-5179	Johnson	WY	Gamma Ray	CBM
96	H-H'	49-019-23762	BLACK DIAMOND ENERGY INC	SCHUMAN 12-29-5179	Johnson	WY	Gamma Ray	CBM
97	H-H'	49-019-25122	BLACK DIAMOND ENERGY INC	SCHUMAN FEDERAL 34-30-5179	Johnson	WY	Gamma Ray	CBM
98	H-H'	49-019-25119	BLACK DIAMOND ENERGY INC	CHRISTIAN FEDERAL 21-31-5179	Johnson	WY	Gamma Ray	CBM
99	H-H'	49-019-20643	DAVIS OIL COMPANY	ANTELOPE DRAW STATE 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
100	H-H'	49-019-27072	YATES PETROLEUM CORPORATION	TOPAZ CS STATE 2	Johnson	WY	Gamma Ray	CBM
101	H-H'	49-019-22653	CNX GAS COMPANY	LUDDECK 34-12	Johnson	WY	Gamma Ray	CBM
102	H-H'	49-019-20114	DAVIS OIL COMPANY	RICHARD-FEDERAL 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
103	H-H'	49-019-22216	CNX GAS COMPANY	PINE GULCH-STATE 16-21	Johnson	WY	Gamma Ray	CBM
104	H-H'	49-019-06350	BLM	MCEWAN 4-12-C	Johnson	WY	Gamma Ray	Oil/Natural Gas
105	H-H'	49-019-22013	HUBER J M CORP	MCEWAN 7-2-50-81	Johnson	WY	Gamma Ray	CBM
<106>	H-H'	49-019-23782	FIDELITY EXPLORATION & PRODUCTION COMPANY	BOLINGER RANCH 14E-301	Johnson	WY	Gamma Ray	CBM
107	H-H'	49-019-22201	FIDELITY EXPLORATION & PRODUCTION	CROSS H 12UF-901	Johnson	WY	Gamma Ray	CBM
108	H-H'	49-019-22244	FIDELITY EXPLORATION & PRODUCTION	CROSS H 43UF-801	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
109	H-H'	49-019-21513	FIDELITY EXPLORATION & PRODUCTION	CROSS H 21UF-1701	Johnson	WY	Gamma Ray	CBM
1	I-I'	49-005-20920	CONSOLIDATED OIL & GAS INC	FEDERAL 21-52-	Campbell	WY	Gamma Ray	Oil/Natural Gas
2	I-I'	49-005-32085	BLACKSTONE OPERATING INC	TRITON 14D-2122	Campbell	WY	Gamma Ray	CBM
3	I-I'	49-005-33498	BLACKSTONE OPERATING INC	BUCKSKIN 21C-2922	Campbell	WY	Gamma Ray	CBM
4	I-I'	49-005-33500	BLACKSTONE OPERATING INC	BUCKSKIN 42C-3022	Campbell	WY	Gamma Ray	CBM
5	I-I'	49-005-31243	BLACKSTONE OPERATING INC	TRITON 24C-3022	Campbell	WY	Gamma Ray	CBM
6	I-I'	49-005-33928	BLACKSTONE OPERATING INC	TRITON 12D-3122	Campbell	WY	Gamma Ray	CBM
<7>	I-I'	49-005-43153	BLACKSTONE OPERATING INC	STATE 32D-3623	Campbell	WY	Gamma Ray	CBM
8	I-I'	49-005-43154	BLACKSTONE OPERATING INC	STATE 23D-3623	Campbell	WY	Gamma Ray	CBM
9	I-I'	49-005-34700	BLACKSTONE OPERATING INC	DALY 31-C-3523	Campbell	WY	Gamma Ray	CBM
10	I-I'	49-005-22218	PUBCO PETROLEUM	FEDERAL 27-16	Campbell	WY	Gamma Ray	Oil/Natural Gas
11	I-I'	49-005-37714	DEVON ENERGY PRODUCTION CO. LP	20 MILE FEDERAL 34C-2823	Campbell	WY	Gamma Ray	CBM
12	I-I'	49-00522696	DEVON ENERGY PRODUCTION CO. LP	ARCO W-044377 2-28	Campbell	WY	Gamma Ray	Oil/Natural Gas
13	I-I'	49-005-21771	ATLANTIC RICHFIELD COMPANY	JAMISON PRONG UNIT 5	Campbell	WY	Resistivity	Oil/Natural Gas
14	I-I'	49-005-37712	DEVON ENERGY PRODUCTION CO. LP	20 MILE FEDERAL 14C-2823	Campbell	WY	Gamma Ray	CBM
15	I-I'	49-005-37679	DEVON ENERGY PRODUCTION CO. LP	20 MILE FEDERAL 43C-3223	Campbell	WY	Gamma Ray	CBM
16	I-I'	49-005-23582	DEVON ENERGY PRODUCTION CO. LP	ARCO FEDERAL 2	Campbell	WY	Resistivity	Oil/Natural Gas
17	I-I'	49-005-23688	DEVON ENERGY PRODUCTION CO. LP	FEDERAL W-045537-4 3-32	Campbell	WY	Gamma Ray	Oil/Natural Gas
18	I-I'	49-005-47479	PENNACO ENERGY INC	TWENTY MILE STATE 1-36-52-74 A	Campbell	WY	Gamma Ray	CBM
19	I-I'	49-005-47475	PENNACO ENERGY INC	TWENTY MILE STATE 5-36-52-74-A	Campbell	WY	Gamma Ray	CBM
20	I-I'	49-005-49-549	PENNACO ENERGY INC	FEDERAL 1-34-52-74 SMACY	Campbell	WY	Gamma Ray	CBM
21	I-I'	49-005-49551	PENNACO ENERGY INC	FEDERAL 5-34-52-74 SMACY	Campbell	WY	Gamma Ray	CBM
22	I-I'	49-005-50146	PENNACO ENERGY INC	SMACY TWENTY MILE 7-33-52-74	Campbell	WY	Gamma Ray	Oil/Natural Gas
23	I-I'	49-005-56313	PENNACO ENERGY INC	EATON 1-30-52-74 SMACYW	Campbell	WY	Gamma Ray	CBM
24	I-I'	49-005-38136	PETRO-CANADA RESOURCES USA INC	FED 5275-25-44CA	Campbell	WY	Gamma Ray	CBM
25	I-I'	49-005-54664	YATES PETROLEUM CORP	LELA CS FEDERAL 4	Campbell	WY	Gamma Ray	CBM
26	I-I'	49-005-54668	YATES PETROLEUM CORP	LELA CS FEDERAL 8	Campbell	WY	Gamma Ray	CBM
27	I-I'	49-005-37173	PETRO-CANADA RESOURCES USA INC	FLOYD FED 5275-22-34 CA	Campbell	WY	Gamma Ray	CBM
28	I-I'	49-005-28845	APACHE CORPORATION	FLOYD 27-5	Campbell	WY	Gamma Ray	Oil/Natural Gas
29	I-I'	49-005-40836	PINNACLE GAS RESOURCES INC	FLOYD BP 01CN-28-52-75	Campbell	WY	Gamma Ray	CBM
30	I-I'	49-005-39576	PINNACLE GAS RESOURCES INC	ELDRIDGE 12CA-28-52-75	Campbell	WY	Gamma Ray	CBM
31	I-I'	49-005-20322	SUN OIL	GOODYEAR FEDERAL 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
32	I-I'	49-005-27092	DAVIS OIL COMPANY	CALHOUN STATE 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
33	I-I'	49-005-53537	LANCE OIL & GAS COMPANY INC	CAMP JOHN STATE 14-36-5276WA	Campbell	WY	Gamma Ray	CBM
34	I-I'	49-019-20822	BP AMERICA PRODUCTION COMPANY	W-84956 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
<35>	I-I'	49-019-25014	YATES PETROLEUM CORP	FORTIFICATION CS ST 2	Johnson	WY	Gamma Ray	CBM
36	I-I'	49-019-20112	DAVIS OIL COMPANY	BOWDLE-FEDERAL 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
37	I-I'	49-019-26637	PETRO-CANADA RESOURCES USA INC	MITCHELL DRAW UNIT 5277-33-24WA	Johnson	WY	Gamma Ray	CBM
38	I-I'	49-019-26633	PETRO-CANADA RESOURCES USA INC	MITCHELL DRAW UNIT 5277-29-44WA	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
39	I-I'	49-019-26939	PETRO-CANADA RESOURCES USA INC	MITCHELL DRAW UNIT 5277-32-12WA	Johnson	WY	Gamma Ray	CBM
40	I-I'	49-019-26635	PETRO-CANADA RESOURCES USA INC	MITCHELL DRAW UNIT 5277-32-22WA	Johnson	WY	Gamma Ray	CBM
41	I-I'	49-019-24951	LANCE OIL & GAS COMPANY INC	RDU FED 14-19-5277	Johnson	WY	Gamma Ray	CBM
42	I-I'	49-019-26433	LANCE OIL & GAS COMPANY INC	RDU 21-23-5278WA	Johnson	WY	Gamma Ray	CBM
43	I-I'	49-019-27671	LANCE OIL & GAS COMPANY INC	RDU 43-21-5278	Johnson	WY	Gamma Ray	CBM
44	I-I'	49-019-27670	LANCE OIL & GAS COMPANY INC	RDU 23-21-5278	Johnson	WY	Gamma Ray	CBM
45	I-I'	49-019-26205	LANCE OIL & GAS COMPANY INC	LAWRENCE 43-19-5278WA	Johnson	WY	Gamma Ray	CBM
46	I-I'	49-019-24441	BLACK DIAMOND ENERGY INC	HEPP 22-25	Johnson	WY	Gamma Ray	CBM
47	I-I'	49-019-24430	BLACK DIAMOND ENERGY INC	HEPP 13-25	Johnson	WY	Gamma Ray	CBM
48	I-I'	49-019-24418	BLACK DIAMOND ENERGY INC	SCHUMAN 32-35	Johnson	WY	Gamma Ray	CBM
49	I-I'	49-019-24417	BLACK DIAMOND ENERGY INC	SCHUMAN 23-35	Johnson	WY	Gamma Ray	CBM
50	I-I'	49-019-24415	BLACK DIAMOND ENERGY INC	SCHUMAN 14-35	Johnson	WY	Gamma Ray	CBM
51	I-I'	49-019-23758	BLACK DIAMOND ENERGY INC	SCHUMAN 12-2-5179	Johnson	WY	Gamma Ray	CBM
52	I-I'	49-019-23079	BLACK DIAMOND ENERGY INC	SCHUMAN 43-3-5179B	Johnson	WY	Gamma Ray	CBM
53	I-I'	49-019-23073	BLACK DIAMOND ENERGY INC	SCHUMAN 21-10 5179 B	Johnson	WY	Gamma Ray	CBM
54	I-I'	49-019-22578	BLACK DIAMOND ENERGY INC	SCHUMAN 12-10B	Johnson	WY	Gamma Ray	CBM
55	I-I'	49-019-23084	BLACK DIAMOND ENERGY INC	SCHUMAN 43-9-5179B	Johnson	WY	Gamma Ray	CBM
56	I-I'	49-019-23071	BLACK DIAMOND ENERGY INC	SHUMAN 34-9 5179B	Johnson	WY	Gamma Ray	CBM
57	I-I'	49-019-22688	LANCE OIL & GAS COMPANY INC	CRAZY WOMAN STATE 2116-5179	Johnson	WY	Gamma Ray	CBM
58	I-I'	49-019-23592	BLACK DIAMOND ENERGY INC	SHUMAN 41-17-5179A	Johnson	WY	Gamma Ray	CBM
59	I-I'	49-019-24131	BLACK DIAMOND ENERGY INC	SHUMAN 34-8-5179	Johnson	WY	Gamma Ray	CBM
60	I-I'	49-019-24130	BLACK DIAMOND ENERGY INC	SHUMAN 14-8-5179	Johnson	WY	Gamma Ray	CBM
61	I-I'	49-019-23726	BLACK DIAMOND ENERGY INC	FIELDGROVE 43-7-5179A	Johnson	WY	Gamma Ray	CBM
62	I-I'	49-019-23728	BLACK DIAMOND ENERGY INC	FIELDGROVE 32-7-5179A	Johnson	WY	Gamma Ray	CBM
63	I-I'	49-019-23724	BLACK DIAMOND ENERGY INC	FIELDGROVE 12-7-5179	Johnson	WY	Gamma Ray	CBM
64	I-I'	49-019-22382	NORTHWEST ENERGY LLC	STATE 7-19-TR.99A	Johnson	WY	Gamma Ray	CBM
65	I-I'	49-019-22381	NORTHWEST ENERGY LLC	STATE 5-TR.99R	Johnson	WY	Gamma Ray	CBM
66	I-I'	49-019-22376	NORTHWEST ENERGY LLC	STATE 1-24A	Johnson	WY	Gamma Ray	CBM
67	I-I'	49-019-22349	NORTHWEST ENERGY LLC	STATE 3-24R	Johnson	WY	Gamma Ray	CBM
68	I-I'	49-019-22453	NORTHWEST ENERGY LLC	DOWD 5-24A	Johnson	WY	Gamma Ray	CBM
69	I-I'	49-019-22676	COMET ENERGY SERVICES LLC	LAWRENCE C4A-27	Johnson	WY	Gamma Ray	CBM
70	I-I'	49-019-22491	COMET ENERGY SERVICES LLC	LAWRENCE BLM D2A-28	Johnson	WY	Gamma Ray	CBM
71	I-I'	49-019-22962	COMET ENERGY SERVICES LLC	STATE A4A-36	Johnson	WY	Gamma Ray	CBM
72	I-I'	49-019-21279	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 41U-212	Johnson	WY	Gamma Ray	CBM
73	I-I'	49-019-21270	M & M RANCH ACQUISITION CO LLC	LDEC 21UF-212	Johnson	WY	Gamma Ray	Oil/Natural Gas
74	I-I'	49-019-21262	FIDELITY EXPLORATION & PRODUC-TION CO	LDEC 11UF-212	Johnson	WY	Gamma Ray	CBM
<75>	I-I'	49-019-21312	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 41UF-312	Johnson	WY	Gamma Ray	CBM
76	I-I'	49-019-21321	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 31BC-312	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
77	I-I'	49-019-21159	FIDELITY EXPLORATION & PRODUCTION CO	TEXACO 21BC1-312	Johnson	WY	Gamma Ray	Oil/Natural Gas
78	I-I'	49-019-21886	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 41UF-412	Johnson	WY	Gamma Ray	CBM
79	I-I'	49-019-21888	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 34UF-3322	Johnson	WY	Gamma Ray	Oil/Natural Gas
80	I-I'	49-019-22204	FIDELITY EXPLORATION & PRODUCTION CO	BORGIALLI 23HE-3222	Johnson	WY	Gamma Ray	CBM
81	I-I'	49-019-22776	HUBER J M CORP	RUBY STATE 15S-36 52-83	Johnson	WY	Gamma Ray	CBM
1	J-J'	49-005-06012	KAISER ENERGY INC	MOHAWK W-052003 1	Campbell	WY	Resistivity	Oil/Natural Gas
2	J-J'	49-005-33274	YATES PETROLEUM CORP	WALL CS STATE 1	Campbell	WY	Gamma Ray	CBM
3	J-J'	49-005-57535	WINDSOR ENERGY GROUP LLC	POWNALL W42-17-42	Campbell	WY	Gamma Ray	CBM
4	J-J'	49-005-57377	WINDSOR ENERGY GROUP LLC	FEDERAL W41018-42	Campbell	WY	Gamma Ray	CBM
5	J-J'	49-005-57944	WINDSOR ENERGY GROUP LLC	FEDERAL W23-7-42	Campbell	WY	Gamma Ray	CBM
6	J-J'	49-005-52512	WINDSOR ENERGY GROUP LLC	HEYDECKER 12-7-42	Campbell	WY	Gamma Ray	CBM
7	J-J'	49-005-55604	WINDSOR ENERGY GROUP LLC	TWENTY MILE P23-7-42	Campbell	WY	Gamma Ray	CBM
8	J-J'	49-005-22726	SOUTHERLAND ROYALTY COMPANY	NORFOLK 2 PATENTED 1	Campbell	WY	Resistivity	Oil/Natural Gas
9	J-J'	49-005-20249	DAVIS OIL COMPANY	KARR W-7785-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
10	J-J'	49-005-23126	DAVIS OIL COMPANY	LYTLE W-7785-1	Campbell	WY	Resistivity	Oil/Natural Gas
11	J-J'	49-005-22019	UNION TEXAS PETROLEUM	CARSON W-4071B-1	Campbell	WY	Resistivity	Oil/Natural Gas
12	J-J'	49-005-57259	PINNACLE GAS RESOURCES INC	HC 11WP-05-54-73	Campbell	WY	Gamma Ray	CBM
13	J-J'	49-005-22721	NORTH FINN LLC	OEDEKOVEN PATENTED 2	Campbell	WY	Gamma Ray	Oil/Natural Gas
<14>	J-J'	49-005-49629	LANCE OIL & GAS COMPANY INC	F ODEKOVEN TRUST 34-12-5474LC	Campbell	WY	Gamma Ray	CBM
15	J-J'	49-005-22491	GOODSTEIN FRED	GOODSTEIN MKM 186114 1	Campbell	WY	Resistivity	Oil/Natural Gas
16	J-J'	49-005-49567	LANCE OIL & GAS COMPANY INC	D. SPELLMAN 23-10-5474LC	Campbell	WY	Gamma Ray	CBM
17	J-J'	49-005-23120	QUADRA OIL & GAS INC	SULLIVAN W-28231 23-9	Campbell	WY	Gamma Ray	Oil/Natural Gas
18	J-J'	49-005-49118	LANCE OIL & GAS COMPANY INC	STATE 23-8-5474W	Campbell	WY	Gamma Ray	CBM
19	J-J'	49-005-49140	LANCE OIL & GAS COMPANY INC	D. SPELLMAN 23-7-5474W	Campbell	WY	Gamma Ray	CBM
20	J-J'	49-005-23366	COX KENDALL JAY	HAROLD SPELLMAN PAT 11-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
21	J-J'	49-005-41111	HIGH ENERGY INC	SMITH 10-12-5	Campbell	WY	Gamma Ray	CBM
22	J-J'	49-005-21980	MULE CREEK OIL	HOMAN W-039370-1-144	Campbell	WY	Gamma Ray	Oil/Natural Gas
23	J-J'	49-005-54459	PENNACO ENERGY INC	BLM FED 14-5-54-75 A	Campbell	WY	Gamma Ray	CBM
24	J-J'	49-005-43041	PENNACO ENERGY INC	ODEGARD 14-6-54-75 CO	Campbell	WY	Gamma Ray	CBM
25	J-J'	49-005-46983	PENNACO ENERGY INC	ODEGARD FEDERAL 7-12-54-76A	Campbell	WY	Gamma Ray	CBM
26	J-J'	49-005-41663	PENNACO ENERGY INC	BARTON 8-11A	Campbell	WY	Gamma Ray	CBM
27	J-J'	49-005-43046	CMS ENERGY INC	BARTON 2-11-54-76 CO	Campbell	WY	Gamma Ray	CBM
28	J-J'	49-005-45022	PENNACO ENERGY INC	ODEGARD 14-2-54-76A	Campbell	WY	Gamma Ray	CBM
29	J-J'	49-005-41661	PENNACO ENERGY INC	BARTON 4-11-54-76A	Campbell	WY	Gamma Ray	CBM
30	J-J'	49-005-43037	PENNACO ENERGY INC	BARTON 16-3-54-76-CO	Campbell	WY	Gamma Ray	CBM
31	J-J'	49-005-41659	PENNACO ENERGY INC	BARTON 2-10-54-76A	Campbell	WY	Gamma Ray	CBM
32	J-J'	49-005-41660	PENNACO ENERGY INC	BARTON 6-10-54-76A	Campbell	WY	Gamma Ray	CBM
33	J-J'	49-005-46888	PENNACO ENERGY INC	BARTON 5-10-54-76A	Campbell	WY	Gamma Ray	CBM
34	J-J'	49-005-47015	PENNACO ENERGY INC	BARTON FED 12-10-54-76A	Campbell	WY	Gamma Ray	CBM

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35	J-J'	49-005-46928	PENNACO ENERGY INC	BARTON FED 7-9-54-76A	Campbell	WY	Gamma Ray	CBM
36	J-J'	49-033-22239	PENNACO ENERGY INC	BARTON 3-9-54-76W	Sheridan	WY	Gamma Ray	CBM
37	J-J'	49-033-23274	PENNACO ENERGY INC	SURANYI FEDERAL 5-9-54-76A	Sheridan	WY	Gamma Ray	CBM
38	J-J'	49-033-22549	CMS ENERGY INC	BARTON 12-4-54-76W	Sheridan	WY	Gamma Ray	CBM
39	J-J'	49-033-23273	PENNACO ENERGY INC	SURANYI FEDERAL 8-8-54-76A	Sheridan	WY	Gamma Ray	CBM
40	J-J'	49-033-20894	PENNACO ENERGY INC	SURANYI 2-8-54-76A	Sheridan	WY	Gamma Ray	CBM
41	J-J'	49-033-23272	PENNACO ENERGY INC	SURANYI 6-8-54-76A	Sheridan	WY	Gamma Ray	CBM
42	J-J'	49-033-23270	PENNACO ENERGY INC	SURANYI FEDERAL 4-8-54-76A	Sheridan	WY	Gamma Ray	CBM
43	J-J'	49-033-22112	PENNACO ENERGY INC	MALLI FED 8-7-54-76A	Sheridan	WY	Gamma Ray	CBM
44	J-J'	49-033-20918	PENNACO ENERGY INC	MALLI 10-7-54-76A	Sheridan	WY	Gamma Ray	CBM
45	J-J'	49-033-20917	PENNACO ENERGY INC	MALLI 14-7-54-76	Sheridan	WY	Gamma Ray	CBM
46	J-J'	49-033-21043	PENNACO ENERGY INC	SURANYI 16-12A	Sheridan	WY	Gamma Ray	CBM
47	J-J'	49-033-21038	PENNACO ENERGY INC	SURANYI 2-13A	Sheridan	WY	Gamma Ray	CBM
48	J-J'	49-033-21040	PENNACO ENERGY INC	SURANYI 6-13A	Sheridan	WY	Gamma Ray	CBM
49	J-J'	49-033-21037	PENNACO ENERGY INC	SURANYI 12-13A	Sheridan	WY	Gamma Ray	CBM
50	J-J'	49-033-21031	PENNACO ENERGY INC	SURANYI 8-14A	Sheridan	WY	Gamma Ray	CBM
51	J-J'	49-033-21032	PENNACO ENERGY INC	SURANYI 10-14-A	Sheridan	WY	Gamma Ray	CBM
52	J-J'	49-033-21030	PENNACO ENERGY INC	SURANYI 6-14A	Sheridan	WY	Gamma Ray	CBM
53	J-J'	49-033-21033	PENNACO ENERGY INC	SURANYI 12-14A	Sheridan	WY	Gamma Ray	CBM
54	J-J'	49-033-22300	PENNACO ENERGY INC	HOFHEIMER 1-22-54-77A	Sheridan	WY	Gamma Ray	CBM
55	J-J'	49-033-21795	PENNACO ENERGY INC	ELLIOT 7-52-44-77A	Sheridan	WY	Gamma Ray	CBM
56	J-J'	49-033-22301	PENNACO ENERGY INC	HOFHEIMER 3-22-54-77A	Sheridan	WY	Gamma Ray	CBM
57	J-J'	49-033-23230	PENNACO ENERGY INC	HOFEIMER 2-21-54-77A	Sheridan	WY	Gamma Ray	CBM
58	J-J'	49-033-24539	MEDALLION EXPLORATION	HOFHEIMER 21-21-5477	Sheridan	WY	Gamma Ray	CBM
59	J-J'	49-033-24537	MEDALLION EXPLORATION	HOFHEIMER 12-21-54-77	Sheridan	WY	Gamma Ray	CBM
60	J-J'	49-033-24533	MEDALLION EXPLORATION	TIET JEN FEDERAL 32-20-54-77	Sheridan	WY	Gamma Ray	CBM
61	J-J'	49-033-24530	MEDALLION EXPLORATION	TIET JEN FEDERAL 12-20-54-77	Sheridan	WY	Gamma Ray	CBM
62	J-J'	49-033-24528	MEDALLION EXPLORATION	TIET JEN FEDERAL 41-19-54-77	Sheridan	WY	Gamma Ray	CBM
<63>	J-J'	49-033-24522	MEDALLION EXPLORATION	TIET JEN FEDERAL 34-18-5477	Sheridan	WY	Gamma Ray	CBM
64	J-J'	49-033-24525	MEDALLION EXPLORATION	TIET JEN FEDERAL 21-19-54-77	Sheridan	WY	Gamma Ray	CBM
65	J-J'	49-033-24502	MEDALLION EXPLORATION	TIER JEN 12-19-5477A	Sheridan	WY	Gamma Ray	CBM
66	J-J'	49-033-20034	KISSINGER PETROLEUM CORP	SMELTING W-0193092 1	Sheridan	WY	Resistivity	Oil/Natural Gas
67	J-J'	49-033-23974	WOLVERINE OPERATIONS LLC	LITTLE 12P-28-5578	Sheridan	WY	Gamma Ray	CBM
68	J-J'	49-033-23980	WOLVERINE OPERATIONS LLC	LITTLE 9P-29-5578	Sheridan	WY	Gamma Ray	CBM
69	J-J'	49-033-25101	CONTINENTAL PRODUCTION CO LLC	LITTLE 1P-30 5578	Sheridan	WY	Gamma Ray	CBM
70	J-J'	49-033-25104	CONTINENTAL PRODUCTION CO LLC	LITTLE 3P-30 5578	Sheridan	WY	Gamma Ray	CBM
71	J-J'	49-033-25100	CONTINENTAL PRODUCTION CO LLC	LITTLE 5P-30-5578	Sheridan	WY	Gamma Ray	CBM
72	J-J'	49-033-23281	CONTINENTAL PRODUCTION CO LLC	PERRY 7P-25	Sheridan	WY	Gamma Ray	CBM
73	J-J'	49-033-23282	CONTINENTAL PRODUCTION CO LLC	PERRY 11P-25	Sheridan	WY	Gamma Ray	CBM
74	J-J'	49-033-22362	CONTINENTAL PRODUCTION CO LLC	BUMBACA 13P-25 5579	Sheridan	WY	Gamma Ray	CBM
75	J-J'	49-033-23784	NEW ENERGY CO LLC	AUZQUI 1	Sheridan	WY	Gamma Ray	CBM
76	J-J'	49-033-26591	WINDSOR ENERGY GROUP LLC	TIET JEN CWP 1-20-5479	Sheridan	WY	Gamma Ray	CBM
77	J-J'	49-033-26483	WINDSOR ENERGY GROUP LLC	TIET JEN 7R-20-5479	Sheridan	WY	Gamma Ray	CBM
78	J-J'	49-033-23318	PINNACLE GAS RESOURCES INC	WELL 32A-2949	Sheridan	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
79	J-J'	49-033-22717	PINNACLE GAS RESOURCES INC	WELL 23A-2949	Sheridan	WY	Gamma Ray	CBM
80	J-J'	49-033-22702	PINNACLE GAS RESOURCES INC	WELL 14D 2949	Sheridan	WY	Gamma Ray	CBM
81	J-J'	49-033-22721	PINNACLE GAS RESOURCES INC	WELL 41A-3149	Sheridan	WY	Gamma Ray	CBM
82	J-J'	49-033-22697	PINNACLE GAS RESOURCES INC	WELL 32A-3149	Sheridan	WY	Gamma Ray	CBM
83	J-J'	49-033-22695	PINNACLE GAS RESOURCES INC	WELL 23A-3149	Sheridan	WY	Gamma Ray	CBM
84	J-J'	49-033-22694	PINNACLE GAS RESOURCES INC	WELL 12A-3149	Sheridan	WY	Gamma Ray	CBM
85	J-J'	49-033-23864	PINNACLE GAS RESOURCES INC	WELL 43A-3640	Sheridan	WY	Gamma Ray	CBM
86	J-J'	49-033-21885	PIONEER OIL LLC	MOORE WWT 2	Sheridan	WY	Gamma Ray	Oil/Natural Gas
87	J-J'	49-033-25177	BRENNAM ENGINEERING & INSTRUMENTATION	UCR 055 11-11C 5300	Sheridan	WY	Gamma Ray	CBM
88	J-J'	49-033-25178	BRENNAM ENGINEERING & INSTRUMENTATION	STATE UCROSS 13-11A 5380	Sheridan	WY	Gamma Ray	CBM
89	J-J'	49-033-24343	BRENNAM ENGINEERING & INSTRUMENTATION	STATE UCROSS 1-15S	Sheridan	WY	Gamma Ray	CBM
90	J-J'	49-033-23499	BRENNAM ENGINEERING & INSTRUMENTATION	STATE UCROSS 7-15S	Sheridan	WY	Gamma Ray	CBM
91	J-J'	49-033-23506	BRENNAM ENGINEERING & INSTRUMENTATION	STATE UCROSS 11-15	Sheridan	WY	Gamma Ray	CBM
92	J-J'	49-033-23496	BRENNAM ENGINEERING & INSTRUMENTATION	STATE UCROSS 13-15S	Sheridan	WY	Gamma Ray	CBM
93	J-J'	49-019-22576	WOLVERINE OPERATIONS LLC	STATE VIGNAROLI 1-20S	Johnson	WY	Gamma Ray	CBM
94	J-J'	49-019-22573	WOLVERINE OPERATIONS LLC	STATE VIGNAROLI 7-20S	Johnson	WY	Gamma Ray	CBM
95	J-J'	49-019-22571	WOLVERINE OPERATIONS LLC	STATE VIGNAROLI 11-20S	Johnson	WY	Gamma Ray	CBM
96	J-J'	49-019-22627	WOLVERINE OPERATIONS LLC	VIGNAROLI 11-19A	Johnson	WY	Gamma Ray	CBM
97	J-J'	49-019-22634	WOLVERINE OPERATIONS LLC	VIGNAROLI 13-19A	Johnson	WY	Gamma Ray	CBM
98	J-J'	49-019-22520	WOLVERINE OPERATIONS LLC	QUINN 9-24A	Johnson	WY	Gamma Ray	CBM
99	J-J'	49-019-22522	WOLVERINE OPERATIONS LLC	QUINN 7-24A	Johnson	WY	Gamma Ray	CBM
100	J-J'	49-033-24413	WOLVERINE OPERATIONS LLC	CARPENTER 3-14	Sheridan	WY	Gamma Ray	CBM
101	J-J'	49-033-20705	WOLVERINE OPERATIONS LLC	COOKSLEY 16-10	Sheridan	WY	Gamma Ray	CBM
102	J-J'	49-033-20704	WOLVERINE OPERATIONS LLC	COOKSELY 15-10	Sheridan	WY	Gamma Ray	CBM
103	J-J'	49-033-20091	ANSCHULTZ CORPORATION	TODD-COOKSLEY 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
104	J-J'	49-033-20560	WOLVERINE OPERATIONS LLC	COOKSLEY 13-10	Sheridan	WY	Gamma Ray	CBM
105	J-J'	49-033-20573	WOLVERINE OPERATIONS LLC	COOKSLEY 16-9	Sheridan	WY	Gamma Ray	CBM
106	J-J'	49-033-20572	WOLVERINE OPERATIONS LLC	COOKSLEY 15-9	Sheridan	WY	Gamma Ray	CBM
107	J-J'	49-033-20571	WOLVERINE OPERATIONS LLC	FOWLER 14-9	Sheridan	WY	Gamma Ray	CBM
108	J-J'	49-033-20561	WOLVERINE OPERATIONS LLC	FOWLER 13-9	Sheridan	WY	Gamma Ray	CBM
109	J-J'	49-033-20568	WOLVERINE OPERATIONS LLC	FOWLER 7-8	Sheridan	WY	Gamma Ray	CBM
110	J-J'	49-033-21665	WOLVERINE OPERATIONS LLC	STATE 13-5	Sheridan	WY	Gamma Ray	CBM
111	J-J'	49-033-21671	WOLVERINE OPERATIONS LLC	STATE 9-6	Sheridan	WY	Gamma Ray	CBM
112	J-J'	49-033-21672	WOLVERINE OPERATIONS LLC	STATE 11-6	Sheridan	WY	Gamma Ray	CBM
113	J-J'	49-033-21669	WOLVERINE OPERATIONS LLC	STATE 5-6	Sheridan	WY	Gamma Ray	CBM
114	J-J'	49-033-21828	MEDALLION EXPLORATION	ELLENWOOD A4A-1	Sheridan	WY	Gamma Ray	CBM
115	J-J'	49-033-22688	MEDALLION EXPLORATION	ELLENWOOD A2A-1	Sheridan	WY	Gamma Ray	CBM
116	J-J'	49-033-23245	MEDALLION EXPLORATION	KRIEZELOK A2A-2	Sheridan	WY	Gamma Ray	CBM
117	J-J'	49-033-23253	MEDALLION EXPLORATION	KRIEZELOK A4A-3	Sheridan	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
118	J-J'	49-033-23251	MEDALLION EXPLORATION	KRIESELOK C2A-3	Sheridan	WY	Gamma Ray	CBM
119	J-J'	49-033-23254	MEDALLION EXPLORATION	KRIESELOK B1A-3	Sheridan	WY	Gamma Ray	CBM
120	J-J'	49-033-25032	MEDALLION EXPLORATION	STATE HARPER C4-5	Sheridan	WY	Gamma Ray	CBM
<121>	J-J'	49-033-25031	MEDALLION EXPLORATION	STATE HBELUS A4-1	Sheridan	WY	Gamma Ray	CBM
1	K-K'	49-005-23106	UPDIKE RESOURCES INC	QUINN W-049821 5	Campbell	WY	Resistivity	Oil/Natural Gas
2	K-K'	49-005-20773	VESSELS TOM JR ETAL	HONDO W-049821 1	Campbell	WY	Resistivity	Oil/Natural Gas
3	K-K'	49-005-56774	SUNCOR ENERGY	FED 15P-31-56-72	Campbell	WY	Gamma Ray	CBM
4	K-K'	49-005-56132	CEDAR RIDGE	HARRIS STATE 9C-36-56-73	Campbell	WY	Gamma Ray	CBM
5	K-K'	49-005-56029	CEDAR RIDGE	HARRIS STATE 11P-36-56-73	Campbell	WY	Gamma Ray	CBM
6	K-K'	49-005-56020	CEDAR RIDGE	HARRIS STATE SP-36-56-73	Campbell	WY	Gamma Ray	CBM
7	K-K'	49-005-56015	CEDAR RIDGE	HARRIS 3C-35-56-73	Campbell	WY	Gamma Ray	CBM
8	K-K'	49-005-22066	OEDEKOVEN WATER & OIL	OIDEKOVEN PATENTED 2-34	Campbell	WY	Resistivity	Oil/Natural Gas
9	K-K'	49-005-22753	KISSINGER PETROLEUM CORP	MORESE LESTER PATENT 4-34	Campbell	WY	Resistivity	Oil/Natural Gas
10	K-K'	49-005-29248	WYATT PETROLEUM CORP	LESTER FEE 33-33	Campbell	WY	Gamma Ray	CBM
11	K-K'	49-005-55465	PINNACLE GAS RESOURCES INC	NORTH SQUAW 15CC-32-56-73	Campbell	WY	Gamma Ray	CBM
12	K-K'	49-005-55464	PINNACLE GAS RESOURCES INC	NS 13CC-32-56-73	Campbell	WY	Gamma Ray	CBM
13	K-K'	49-005-43513	STORM CAT ENERGY USA OPERATING CORP	STATE 09CY-36 56-74	Campbell	WY	Gamma Ray	CBM
14	K-K'	49-005-37097	STORM CAT ENERGY USA OPERATING CORP	PALO FEDERAL 4-35	Campbell	WY	Gamma Ray	CBM
15	K-K'	49-005-37101	STORM CAT ENERGY USA OPERATING CORP	BARBE FEDERAL 06-CY-35 56-74	Campbell	WY	Gamma Ray	CBM
16	K-K'	49-005-42278	STORM CAT ENERGY USA OPERATING CORP	BARBE CANYON 2-34	Campbell	WY	Gamma Ray	CBM
17	K-K'	49-005-56680	STORM CAT ENERGY USA OPERATING CORP	BARBE FEDERAL 05CY-34 56-74	Campbell	WY	Gamma Ray	CBM
18	K-K'	49-005-21970	MIDGARD ENERGY COMPANY	AZTEC W-0148152 1-33	Campbell	WY	Resistivity	Oil/Natural Gas
19	K-K'	49-005-45939	HUBER J M CORP	N STONES THROW FED 5W-32 56-74	Campbell	WY	Gamma Ray	CBM
20	K-K'	49-005-47608	CONTINENTAL PRODUCTION CO LLC	LXF 3-31A	Campbell	WY	Gamma Ray	CBM
21	K-K'	49-005-34687	CONTINENTAL PRODUCTION CO LLC	LXS 2-36C	Campbell	WY	Gamma Ray	CBM
22	K-K'	49-005-23413	CONTINENTAL PRODUCTION CO LLC	FRITZ 3-2	Campbell	WY	Resistivity	Oil/Natural Gas
<23>	K-K'	49-005-40937	CONTINENTAL PRODUCTION CO LLC	LXF 1-35CX	Campbell	WY	Gamma Ray	CBM
24	K-K'	49-005-37641	CONTINENTAL PRODUCTION CO LLC	LXF 3-35C	Campbell	WY	Gamma Ray	CBM
25	K-K'	49-005-23675	CONTINENTAL PRODUCTION CO LLC	FALCONE W-32261 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
26	K-K'	49-005-40239	PENNACO ENERGY INC	ODEGARD 15-27 CA	Campbell	WY	Gamma Ray	CBM
27	K-K'	49-005-36735	LANCE OIL & GAS COMPANY INC	SPOTTED HORSE 41-33C	Campbell	WY	Gamma Ray	CBM
28	K-K'	49-005-23405	DAVIS OIL COMPANY	LOMAN FEE 1	Campbell	WY	Resistivity	Oil/Natural Gas
29	K-K'	49-005-37227	CMS OIL & GAS COMPANY	WEST CA 16-29XCO	Campbell	WY	Gamma Ray	CBM
30	K-K'	49-005-42319	CMS OIL & GAS COMPANY	WEST9-30XCO	Campbell	WY	Gamma Ray	CBM
31	K-K'	49-005-57830	YATES PETROLEUM CORP	PLATEAU CS FEDERAL 13	Campbell	WY	Gamma Ray	CBM
32	K-K'	49-005-42795	CMS OIL & GAS COMPANY	WEST 5-25CO	Campbell	WY	Gamma Ray	CBM
33	K-K'	49-005-42799	PENNACO ENERGY INC	WEST 7-26 CO	Campbell	WY	Gamma Ray	CBM
34	K-K'	49-005-57929	YATES PETROLEUM CORP	PLATEAU CS FEDERAL 17	Campbell	WY	Gamma Ray	CBM
35	K-K'	49-005-46593	PENNACO ENERGY INC	OPPELT 6-27-56-76 CO	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
36	K-K'	49-033-26810	DEVON ENERGY PRODUCTION CO. LP	GIBBS BTOTHERS FED 32K-3	Sheridan	WY	Gamma Ray	CBM
37	K-K'	49-033-26816	DEVON ENERGY PRODUCTION CO. LP	GIBBS BROTHERS FED 30K-10	Sheridan	WY	Gamma Ray	CBM
38	K-K'	49-033-21703	DAVIS OIL COMPANY	GIBBS 9-25 CO	Sheridan	WY	Gamma Ray	CBM
39	K-K'	49-033-24448	PENNACO ENERGY INC	CLEAR CREEK 11-26-56-77 CO	Sheridan	WY	Gamma Ray	CBM
40	K-K'	49-033-20622	DAVIS OIL COMPANY	CLARKE-FEDERAL 1	Sheridan	WY	Resistivity	Oil/Natural Gas
41	K-K'	49-033-27566	ST MARY LAND & EXPLORATION CO	WY STATE 56-77-28-03P	Sheridan	WY	Gamma Ray	CBM
42	K-K'	49-033-27563	ST MARY LAND & EXPLORATION CO	APPLEGATE 56-77-29-01P	Sheridan	WY	Gamma Ray	CBM
43	K-K'	49-033-27411	ST MARY LAND & EXPLORATION CO	REMMINGTON 56-77-19-11P	Sheridan	WY	Gamma Ray	CBM
<44>	K-K'	49-033-27405	ST MARY LAND & EXPLORATION CO	REMINGTON 56-78-24-07P	Sheridan	WY	Gamma Ray	CBM
45	K-K'	49-033-27382	ST MARY LAND & EXPLORATION CO	DOME 56-78-24-03P	Sheridan	WY	Gamma Ray	CBM
46	K-K'	49-033-20170	HERSHEY OIL CORPORATION	BUFFALO CREEK FEE 1-10	Sheridan	WY	Gamma Ray	Oil/Natural Gas
47	K-K'	49-033-05026	DAVIS OIL COMPANY	BUFFALO CREEK PATENT 1	Sheridan	WY	Resistivity	Oil/Natural Gas
48	K-K'	49-033-20137	HARPER OIL COMPANY	GRIFFITH ROBERTS	Sheridan	WY	Resistivity	Oil/Natural Gas
49	K-K'	49-033-26492	WINDSOR ENERGY GROUP LLC	AG RESERVE STATE 9E-16-56-79	Sheridan	WY	Gamma Ray	CBM
50	K-K'	49-033-26494	WINDSOR ENERGY GROUP LLC	AG RESERVE STATE 11E-16-56-79	Sheridan	WY	Gamma Ray	CBM
51	K-K'	49-033-26549	WINDSOR ENERGY GROUP LLC	FARMLAND RESERVE 15E-17-56-79	Sheridan	WY	Gamma Ray	CBM
52	K-K'	49-033-26496	WINDSOR ENERGY GROUP LLC	FARMLAND RESERVE 9E-7-56-79	Sheridan	WY	Gamma Ray	CBM
53	K-K'	49-033-20181	DAVIS OIL COMPANY	VERNON FEE 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
54	K-K'	49-033-20140	APACHE CORPORATION	HUTTON FEE 14-1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
55	K-K'	49-033-20031	DAVIS OIL COMPANY	AMPET W-5997-2	Sheridan	WY	Resistivity	Oil/Natural Gas
56	K-K'	49-033-20060	DAVIS OIL COMPANY	AMPET 3-9	Sheridan	WY	Resistivity	Oil/Natural Gas
57	K-K'	49-033-25758	FIDELITY EXPLORATION & PRODUCTION CO	S. BAKER 3-30-57-80	Sheridan	WY	Gamma Ray	CBM
58	K-K'	49-033-20236	PRAIRIE WEST PETROLEUM	NELSON FEDERAL 4-1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
59	K-K'	49-033-20237	TAUBERT & STEED	HUTTON BAKER 25-44 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
60	K-K'	49-033-26510	RELIANCE RESOURCES	RELIANCE STATE 9-22-57-81	Sheridan	WY	Gamma Ray	CBM
61	K-K'	49-033-25829	FIDELITY EXPLORATION & PRODUCTION CO	HUTTON 13-15-57-81 CR	Sheridan	WY	Gamma Ray	CBM
62	K-K'	49-033-27249	FIDELITY EXPLORATION & PRODUCTION CO	CARTER 23SM/D1/D3/M	Sheridan	WY	Gamma Ray	CBM
63	K-K'	49-033-27212	FIDELITY EXPLORATION & PRODUCTION CO	SR CATTLE 14SM/D1/D3/M/C-0771	Sheridan	WY	Gamma Ray	CBM
64	K-K'	49-033-24286	PENNACO ENERGY INC	STATE 9-12-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
65	K-K'	49-033-24467	PENNACO ENERGY INC	SALES 7-12-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
66	K-K'	49-033-24465	PENNACO ENERGY INC	SALES 3-12-57-82	Sheridan	WY	Gamma Ray	CBM
67	K-K'	49-033-25874	PENNACO ENERGY INC	DOW 13-1-57-82	Sheridan	WY	Gamma Ray	CBM
68	K-K'	49-033-25886	PENNACO ENERGY INC	DOW 9-2-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
69	K-K'	49-033-25876	PENNACO ENERGY INC	DOW 11-2-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
70	K-K'	49-033-25875	PENNACO ENERGY INC	DOW 5-2-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
71	K-K'	49-033-25887	PENNACO ENERGY INC	DOW 1-3-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
72	K-K'	49-033-5879	PENNACO ENERGY INC	DOW 3-3-57-82 MZ/CR	Sheridan	WY	Gamma Ray	Oil/Natural Gas
73	K-K'	49-033-25964	PENNACO ENERGY INC	DOW 5-3-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
74	K-K'	49-033-26076	PENNACO ENERGY INC	COLE 3-4-57-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
75	K-K'	49-033-26067	PENNACO ENERGY INC	COLE 13-33-58-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
76	K-K'	49-033-26062	PENNACO ENERGY INC	COLR 9-32-58-82 MZ/CR	Sheridan	WY	Gamma Ray	CBM
77	K-K'	49-033-26121	PENNACO ENERGY INC	STATE 11-32-58-82	Sheridan	WY	Gamma Ray	CBM
78	K-K'	49-033-25692	HUBER J M CORP	TREMBATH FED 9MK-31 58-82	Sheridan	WY	Gamma Ray	CBM
79	K-K'	49-033-25688	HUBER J M CORP	TREMBATH FED 11MK-31 58-82	Sheridan	WY	Gamma Ray	CBM
80	K-K'	49-033-25693	HUBER J M CORP	TREMBATH FED 13MK-31 58-82	Sheridan	WY	Gamma Ray	CBM
81	K-K'	49-033-20878	HUBER J M CORP	TREMBATH STATE 9M-36-58-83	Sheridan	WY	Gamma Ray	CBM
82	K-K'	49-033-21654	HUBER J M CORP	HUBER TREMBATH SE36-58-83	Sheridan	WY	Gamma Ray	Oil/Natural Gas
83	K-K'	49-033-21271	HUBER J M CORP	HUBER-TREMBATH 11M-36-58-83	Sheridan	WY	Gamma Ray	CBM
84	K-K'	49-033-22587	HUBER J M CORP	TREMBATH STATE 12M-36 58-83	Sheridan	WY	Gamma Ray	CBM
85	K-K'	49-033-22198	HUBER J M CORP	PILCH 9M-35 58-83	Sheridan	WY	Gamma Ray	CBM
86	K-K'	49-033-20821	HUBER J M CORP	PILCH 10M-35-58-83	Sheridan	WY	Gamma Ray	CBM
87	K-K'	49-033-20515	HUBER J M CORP	PILCH 11KLK-35-58-83	Sheridan	WY	Gamma Ray	CBM
88	K-K'	49-033-20663	HUBER J M CORP	PILCH 11D3M-35 58-83	Sheridan	WY	Gamma Ray	CBM
89	K-K'	49-033-20693	HUBER J M CORP	PILCH 12D3-35 58-83	Sheridan	WY	Gamma Ray	CBM
90	K-K'	49-033-20510	HUBER J M CORP	PILCH 9D3-34 58-83	Sheridan	WY	Gamma Ray	CBM
91	K-K'	49-033-20511	HUBER J M CORP	PILCH 10KLK-34 58-83	Sheridan	WY	Gamma Ray	CBM
92	K-K'	49-033-20512	HUBER J M CORP	HUBER-PILCH 14-34-58-83	Sheridan	WY	Gamma Ray	Oil/Natural Gas
93	K-K'	49-033-21019	HUBER J M CORP	PILCH 13D3-34 5883	Sheridan	WY	Gamma Ray	CBM
94	K-K'	49-033-21216	FIDELITY EXPLORATION & PRODUCTION CO	HELVEY 23C-3383	Sheridan	WY	Gamma Ray	CBM
95	K-K'	49-033-23677	HUBER J M CORP	DUNNING STATE 9M-32 58-83	Sheridan	WY	Gamma Ray	CBM
96	K-K'	49-033-22950	HUBER J M CORP	DUNNING STATE 15K-32 58-83	Sheridan	WY	Gamma Ray	CBM
<97>	K-K'	49-033-22813	HUBER J M CORP	DUNNING STATE 13K-32 58-83	Sheridan	WY	Gamma Ray	CBM
98	K-K'	49-033-22513	HUBER J M CORP	DUNNING 9-31 58-83	Sheridan	WY	Gamma Ray	CBM
99	K-K'	49-033-23197	HUBER J M CORP	ANKNEY 15K-31 58-84	Sheridan	WY	Gamma Ray	CBM
100	K-K'	49-033-23701	HUBER J M CORP	DELAPP 13MK-31 58-83	Sheridan	WY	Gamma Ray	CBM
101	K-K'	49-033-23715	HUBER J M CORP	DELAPP 15LK-36 58-84	Sheridan	WY	Gamma Ray	CBM
102	K-K'	49-033-23716	HUBER J M CORP	DELAPP 13K-36 58-84	Sheridan	WY	Gamma Ray	CBM
103	K-K'	49-033-22141	HUBER J M CORP	WILSON 9K-35 58-84	Sheridan	WY	Gamma Ray	CBM
104	K-K'	49-033-23742	HUBER J M CORP	PADLOCK 13LK-35 58-84	Sheridan	WY	Gamma Ray	CBM
105	K-K'	49-033-20163	DAVIS OIL COMPANY	SCHREIBEIS 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
1	L-L'	49-005-22561	GOWER OIL COMPANY	STATE 14-36	Campbell	WY	Resistivity	Oil/Natural Gas
2	L-L'	49-005-29114	TRUE OIL LLC	MILLER 22-2	Campbell	WY	Gamma Ray	Oil/Natural Gas
3	L-L'	49-005-28876	TRUE OIL LLC	SAMS 32-3	Campbell	WY	Gamma Ray	Oil/Natural Gas
4	L-L'	49-005-28775	WESTAR DRILLING VENT	GAS DRAW UT W-92782 1-10	Campbell	WY	Gamma Ray	Oil/Natural Gas
5	L-L'	49-005-22977	KISSINGER PETROLEUM CORP	AMOCO WEISCHEDEL 13-4	Campbell	WY	Gamma Ray	Oil/Natural Gas
6	L-L'	49-005-21089	DAVIS OIL COMPANY	U-CRAIG FEDERAL 2	Campbell	WY	Resistivity	Oil/Natural Gas
7	L-L'	49-005-20895	DAVIS OIL COMPANY	U-CRAIG FEDERAL 58-1	Campbell	WY	Resistivity	Oil/Natural Gas
8	L-L'	49-005-21035	EMERALD RESTORATION & PROD	SANDBAR WEST UIT B 66	Campbell	WY	Resistivity	Oil/Natural Gas

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
9	L-L'	49-005-20431	EMERALD RESTORATION & PROD	SANDBAR UNIT B 9	Campbell	WY	Resistivity	Oil/Natural Gas
10	L-L'	49-005-20361	EMERALD RESTORATION & PROD	SANDBAR B UNIT 6	Campbell	WY	Resistivity	Oil/Natural Gas
11	L-L'	49-005-20551	EMERALD RESTORATION & PROD	SANDBAR UNIT B 19	Campbell	WY	Resistivity	Oil/Natural Gas
12	L-L'	49-005-20531	MONSANTO COMPANY	GREENOUGH 3	Campbell	WY	Resistivity	Oil/Natural Gas
13	L-L'	49-005-22593	ALL MINERALS INC	SANDBAR UNIT A 1	Campbell	WY	Resistivity	Oil/Natural Gas
14	L-L'	49-005-50004	HUBER JM CORP	OEDEKOVEN FED 9LW-28 57-74	Campbell	WY	Gamma Ray	CBM
15	L-L'	49-005-49948	HUBER JM CORP	OEDEKOVEN FED 3LW-33 57-74	Campbell	WY	Gamma Ray	CBM
16	L-L'	49-005-37285	HUBER JM CORP	FEDERAL/MANIGAULT 9-32-57-74	Campbell	WY	Gamma Ray	CBM
17	L-L'	49-005-37289	HUBER JM CORP	FEDERAL 19-32-57-74	Campbell	WY	Gamma Ray	CBM
18	L-L'	49-005-52597	HUBER JM CORP	MANIGAULT FED 18LW-31 57-74	Campbell	WY	Gamma Ray	CBM
19	L-L'	49-005-52598	HUBER JM CORP	MANIGAULT FED 20LW-31 57-74	Campbell	WY	Gamma Ray	CBM
20	L-L'	49-005-38907	HUBER JM CORP	HUBER STATE 20-36-57-75	Campbell	WY	Gamma Ray	CBM
21	L-L'	49-005-49968	HUBER JM CORP	MANIGAULT FED 14LW-35 57-75	Campbell	WY	Gamma Ray	CBM
22	L-L'	49-005-59269	HUBER JM CORP	MANIGAULT 9LW-34-57-75	Campbell	WY	Gamma Ray	CBM
23	L-L'	49-005-35798	HUBER JM CORP	MANIGAULT FED 14LW-34 57-75	Campbell	WY	Gamma Ray	CBM
24	L-L'	49-005-58846	HUBER JM CORP	MANIGAULT FED 9LW-33 57-75	Campbell	WY	Gamma Ray	CBM
25	L-L'	49-005-58847	HUBER JM CORP	MANIGAULT FED 13LW-33 57-75	Campbell	WY	Gamma Ray	CBM
26	L-L'	49-005-57824	YATES PETROLEUM CORP	LX BAR CS FEDERAL 1	Campbell	WY	Gamma Ray	CBM
27	L-L'	49-005-52099	HUBER JM CORP	MANIGAULT 3CKW-5 56-75	Campbell	WY	Gamma Ray	CBM
<28>	L-L'	49-005-57813	YATES PETROLEUM CORPORATION	LX BAR CS FEDERAL 8	Campbell	WY	Gamma Ray	CBM
29	L-L'	49-005-57868	YATES PETROLEUM CORP	STRIPE CS FEDERAL 5	Campbell	WY	Gamma Ray	CBM
30	L-L'	49-005-39212	YATES PETROLEUM CORP	CS DEEP STATE 10	Campbell	WY	Gamma Ray	CBM
31	L-L'	49-005-21011	DAVIS OIL COMPANY	GIBB-FEDERAL 1	Campbell	WY	Resistivity	Oil/Natural Gas
32	L-L'	49-005-27416	SKYLINE OIL COMPANY	BUFFALO CREEK W43085 3-32	Campbell	WY	Gamma Ray	Oil/Natural Gas
33	L-L'	49-005-56332	STORM CAT ENERGY USA OPERATING CORP	FEDERAL 17-33-5776CW	Campbell	WY	Gamma Ray	CBM
34	L-L'	49-033-26586	STORM CAT ENERGY USA OPERATING CORP	FEDERAL 13-33-5776CW	Sheridan	WY	Gamma Ray	CBM
35	L-L'	49-033-26605	PINNACLE GAS RESOURCES INC	CB FED 15CCWP-32-57-76	Sheridan	WY	Gamma Ray	CBM
36	L-L'	49-033-26529	PINNACLE GAS RESOURCES INC	CB 13WP-32-57-76	Sheridan	WY	Gamma Ray	CBM
37	L-L'	49-033-26578	PINNACLE GAS RESOURCES INC	CB 15WP-31-57-76	Sheridan	WY	Gamma Ray	CBM
38	L-L'	49-033-26337	ST MARY LAND & EXPLORATION CO	REMINGTON 57-76-31-21P	Sheridan	WY	Gamma Ray	CBM
39	L-L'	49-033-26666	PINNACLE GAS RESOURCES INC	CB 01WP-36-57-77	Sheridan	WY	Gamma Ray	CBM
40	L-L'	49-033-26956	PINNACLE GAS RESOURCES INC	CB FED 15CCWP-25-57-77	Sheridan	WY	Gamma Ray	CBM
41	L-L'	49-033-26996	PINNACLE GAS RESOURCES INC	CB FED 09CCWP-26-57-77	Sheridan	WY	Gamma Ray	CBM
42	L-L'	49-033-26992	PINNACLE GAS RESOURCES INC	CB FED 05CCWP-26-57-77	Sheridan	WY	Gamma Ray	CBM
43	L-L'	49-033-27392	PINNACLE GAS RESOURCES INC	CB 11-22-57-77	Sheridan	WY	Gamma Ray	CBM
44	L-L'	49-033-27388	PINNACLE GAS RESOURCES INC	CB 05WP-22-57-77	Sheridan	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
45	L-L'	49-033-27631	PINNACLE GAS RESOURCES INC	CB 02-21-57-77	Sheridan	WY	Gamma Ray	CBM
46	L-L'	49-033-27857	PINNACLE GAS RESOURCES INC	CB STATE 13-16-57-77	Sheridan	WY	Gamma Ray	CBM
47	L-L'	49-033-27910	PINNACLE GAS RESOURCES INC	CB 15-17-57-77	Sheridan	WY	Gamma Ray	CBM
48	L-L'	49-033-27908	PINNACLE GAS RESOURCES INC	CB 01-19-57-77	Sheridan	WY	Gamma Ray	CBM
49	L-L'	49-033-20037	BOEKEL R G	NORTH 42-23	Sheridan	WY	Resistivity	Oil/Natural Gas
<50>	L-L'	49-033-26299	YATES PETROLEUM CORP	BIOTITE CS STATE 2	Sheridan	WY	Gamma Ray	CBM
51	L-L'	49-033-26884	ST MARY LAND & EXPLORATION CO	ROSENTHAL 57-78-20-11K	Sheridan	WY	Gamma Ray	CBM
52	L-L'	49-033-24809	ST MARY LAND & EXPLORATION CO	REMMINGTON 57-79-13-11	Sheridan	WY	Gamma Ray	CBM
53	L-L'	49-033-20092	BP EXPLORATION INC	KENDRICK-DOOLY 1	Sheridan	WY	Resistivity	Oil/Natural Gas
54	L-L'	49-033-26739	ST MARY LAND & EXPLORATION CO	WY STATE 57-79-16-01KB	Sheridan	WY	Gamma Ray	CBM
55	L-L'	49-033-26765	ST MARY LAND & EXPLORATION CO	REMINGTON 57-79-09-11K	Sheridan	WY	Gamma Ray	CBM
56	L-L'	49-033-26747	ST MARY LAND & EXPLORATION CO	REMINGTON 57-79-08-09KB	Sheridan	WY	Gamma Ray	CBM
57	L-L'	49-033-26735	ST MARY LAND & EXPLORATION CO	WY STATE 57-79-08-03CK	Sheridan	WY	Gamma Ray	CBM
58	L-L'	49-033-26769	ST MARY LAND & EXPLORATION CO	REMINGTON 57-79-06-03KB	Sheridan	WY	Gamma Ray	CBM
59	L-L'	49-033-25599	ST MARY LAND & EXPLORATION CO	WY STATE 58-80-36-11CK	Sheridan	WY	Gamma Ray	CBM
60	L-L'	49-033-25736	ST MARY LAND & EXPLORATION CO	FEDERAL 58-80 26-11CK	Sheridan	WY	Gamma Ray	CBM
61	L-L'	49-033-25735	ST MARY LAND & EXPLORATION CO	FEDERAL 58-80 27-01CK	Sheridan	WY	Gamma Ray	CBM
62	L-L'	49-033-26731	ST MARY LAND & EXPLORATION CO	REMINGTON 58-80-22-03KB	Sheridan	WY	Gamma Ray	CBM
63	L-L'	25-003-21311	PENNACO ENERGY INC	DEER CREEK 6-30-9-42	Big Horn	MT	Gamma Ray	Oil/Natural Gas
64	L-L'	25-003-21296	FIDELITY EXPLORATION & PRODUCTION CO	HOLMES FED 14C-2291	Big Horn	MT	Gamma Ray	Oil/Natural Gas
65	L-L'	25-003-22028	FIDELITY EXPLORATION & PRODUCTION CO	HOLMES 44C-2091	Big Horn	MT	Gamma Ray	Oil/Natural Gas
66	L-L'	25-003-22018	FIDELITY EXPLORATION & PRODUCTION CO	HOLMES 22C-2091	Big Horn	MT	Gamma Ray	Oil/Natural Gas
67	L-L'	25-003-21998	FIDELITY EXPLORATION & PRODUCTION CO	HOMES 42D2-1991	Big Horn	MT	Gamma Ray	Oil/Natural Gas
68	L-L'	25-003-22499	FIDELITY EXPLORATION & PRODUCTION CO	RANCHOLME 32CW-1991	Big Horn	MT	Gamma Ray	Oil/Natural Gas
69	L-L'	25-003-22005	FIDELITY EXPLORATION & PRODUCTION CO	HOLMES 23C-1991	Big Horn	MT	Gamma Ray	Oil/Natural Gas
70	L-L'	25-003-21962	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG FED 42C-2490	Big Horn	MT	Gamma Ray	Oil/Natural Gas
71	L-L'	25-003-21952	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 22C-2490	Big Horn	MT	Gamma Ray	Oil/Natural Gas
72	L-L'	25-003-21943	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 42C-2390	Big Horn	MT	Gamma Ray	Oil/Natural Gas
73	L-L'	25-003-22490	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 32C/W-2390	Big Horn	MT	Gamma Ray	Oil/Natural Gas
74	L-L'	25-003-21939	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 22C-2390	Big Horn	MT	Gamma Ray	Oil/Natural Gas
75	L-L'	25-003-21934	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 13C-2390	Big Horn	MT	Gamma Ray	Oil/Natural Gas
76	L-L'	25-003-21702	FIDELITY EXPLORATION & PRODUCTION CO	VISBORG 34C-2290	Big Horn	MT	Gamma Ray	Oil/Natural Gas
77	L-L'	25-003-22575	FIDELITY EXPLORATION & PRODUCTION CO	STATE 24C/W-2290	Big Horn	MT	Gamma Ray	Oil/Natural Gas

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
78	L-L'	25-003-21731	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL FEDERAL 34C-2190	Big Horn	MT	Gamma Ray	Oil/Natural Gas
79	L-L'	25-003-21742	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL FEDERAL 12C-2890	Big Horn	MT	Gamma Ray	Oil/Natural Gas
80	L-L'	25-003-21436	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 34C-2090	Big Horn	MT	Gamma Ray	Oil/Natural Gas
81	L-L'	25-003-21433	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 23C-2090	Big Horn	MT	Gamma Ray	Oil/Natural Gas
82	L-L'	25-003-21466	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 32C-1990	Big Horn	MT	Gamma Ray	Oil/Natural Gas
83	L-L'	25-003-21909	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL FEDERAL 12C-1990	Big Horn	MT	Gamma Ray	Oil/Natural Gas
84	L-L'	25-003-21459	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 41C-2499	Big Horn	MT	Gamma Ray	Oil/Natural Gas
85	L-L'	25-003-21523	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 23C-1399	Big Horn	MT	Gamma Ray	Oil/Natural Gas
86	L-L'	25-003-21582	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 12D-1399	Big Horn	MT	Gamma Ray	Oil/Natural Gas
87	L-L'	25-003-22380	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 34W-0299	Big Horn	MT	Gamma Ray	Oil/Natural Gas
88	L-L'	25-003-21864	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 32C-299	Big Horn	MT	Gamma Ray	Oil/Natural Gas
89	L-L'	25-003-21606	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 32M-299	Big Horn	MT	Gamma Ray	Oil/Natural Gas
90	L-L'	25-003-22514	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 21W-0299	Big Horn	MT	Gamma Ray	Oil/Natural Gas
91	L-L'	25-003-21647	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 21C-299	Big Horn	MT	Gamma Ray	Oil/Natural Gas
92	L-L'	25-003-21619	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 14C-3589	Big Horn	MT	Gamma Ray	Oil/Natural Gas
93	L-L'	25-003-21625	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 34C-3489	Big Horn	MT	Gamma Ray	Oil/Natural Gas
<94>	L-L'	25-003-21989	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 32W-2889	Big Horn	MT	Gamma Ray	CBM
95	L-L'	25-003-21651	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 12D2/3-2089	Big Horn	MT	Gamma Ray	Oil/Natural Gas
1	M-M'	32-7B	MT BUREAU OF MINES AND GEOLOGY	SM-10	Powder River	MT	Lith-Log	Coal
<2>	M-M'	32-8B	UNITED STATES GEOLOGICAL SURVEY	US-77113	Powder River	MT	Gamma Ray	Coal
3	M-M'	32-35B	UNITED STATES GEOLOGICAL SURVEY	US-80100	Powder River	MT	Gamma Ray	Coal
4	M-M'	31-7B	UNITED STATES GEOLOGICAL SURVEY	US-77109	Powder River	MT	Gamma Ray	Coal
5	M-M'	31-41B	UNITED STATES GEOLOGICAL SURVEY	US-80099	Powder River	MT	Gamma Ray	Coal
6	M-M'	31-5B	UNITED STATES GEOLOGICAL SURVEY	US-77108	Powder River	MT	Gamma Ray	Coal
7	M-M'	31-4B	UNITED STATES GEOLOGICAL SURVEY	US-77103	Powder River	MT	Gamma Ray	Coal
8	M-M'	23-20B	UTAH INT. DRILL HOLE	M75-43	Powder River	MT	Lith-Log	Coal
9	M-M'	25-075-22274	PINNACLE GAS RESOURCES INC	STATE 6-16-8-45 WP	Powder River	MT	Gamma Ray	CBM
10	M-M'	25-075-21555	CHANDLER & ASSOCIATES	FINN CREEK GOVERNMENT 1	Powder River	MT	Gamma Ray	Oil/Natural Gas
11	M-M'	23-18B	UTAH INT. DRILL HOLE	M75-10	Powder River	MT	Gamma Ray	Coal

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
12	M-M'	22-25B	MT BUREAU OF MINES AND GEOLOGY	US-82002A	Big Horn	MT	Gamma Ray	Coal
13	M-M'	22-21B	UNITED STATES GEOLOGICAL SURVEY	OTTER 4	Big Horn	MT	Gamma Ray	Coal
14	M-M'	22-27B	MT BUREAU OF MINES AND GEOLOGY	US-82008	Big Horn	MT	Gamma Ray	Coal
15	M-M'	29-1B	MT BUREAU OF MINES AND GEOLOGY	SH-13	Big Horn	MT	Lith-Log	Coal
16	M-M'	29-2B	MT BUREAU OF MINES AND GEOLOGY/UNITED STATES GEOLOGICAL SURVEY	HWC 4	Big Horn	MT	Gamma Ray	Coal
17	M-M'	29-9B	UNITED STATES GEOLOGICAL SURVEY	US-7791	Big Horn	MT	Gamma Ray	Coal
18	M-M'	29-8B	UNITED STATES GEOLOGICAL SURVEY	US-7792	Big Horn	MT	Gamma Ray	Coal
19	M-M'	29-7B	UNITED STATES GEOLOGICAL SURVEY	US-7793	Big Horn	MT	Gamma Ray	Coal
<20>	M-M'	29-5B	UNITED STATES GEOLOGICAL SURVEY	AUGER 1	Big Horn	MT	Lith-Log	Coal
21	M-M'	29-4B	MT BUREAU OF MINES AND GEOLOGY	US-7778	Big Horn	MT	Gamma Ray	Coal
22	M-M'	28-1B	MT BUREAU OF MINES AND GEOLOGY	US-7761	Big Horn	MT	Gamma Ray	Coal
23	M-M'	20-15B	MT BUREAU OF MINES AND GEOLOGY	SH-28	Big Horn	MT	Lith-Log	Coal
24	M-M'	28-4B	MT BUREAU OF MINES AND GEOLOGY	US-7760	Big Horn	MT	Gamma Ray	Coal
25	M-M'	28-6B	MT BUREAU OF MINES AND GEOLOGY	US-7759	Big Horn	MT	Gamma Ray	Coal
26	M-M'	28-29B	UNITED STATES GEOLOGICAL SURVEY MINERALS MANAGEMENT SERVICE	R82-13	Big Horn	MT	Lith-Log	Coal
27	M-M'	28-27B	UNITED STATES GEOLOGICAL SURVEY MINERALS MANAGEMENT SERVICE	R82-15	Big Horn	MT	Lith-Log	Coal
28	M-M'	25-003-22239	PINNACLE GAS RESOURCES INC	REAVIS 29-0842 11LCW	Big Horn	MT	Gamma Ray	CBM
29	M-M'	25-003-22242	PINNACLE GAS RESOURCES INC	REAVIS 29-0842 13LCW	Big Horn	MT	Gamma Ray	CBM
30	M-M'	25-003-22142	PINNACLE GAS RESOURCES INC	RANCHOLME 24-0841 9LCW	Big Horn	MT	Gamma Ray	CBM
31	M-M'	25-003-22146	PINNACLE GAS RESOURCES INC	RANCHOLME 24-0841 10LCW	Big Horn	MT	Gamma Ray	CBM
32	M-M'	25-003-22138	PINNACLE GAS RESOURCES INC	RANCHOLME 24-0841 11LCW	Big Horn	MT	Gamma Ray	CBM
33	M-M'	25-003-22126	PINNACLE GAS RESOURCES INC	LOTT 23-0841 10LCW	Big Horn	MT	Gamma Ray	CBM
34	M-M'	25-003-22122	PINNACLE GAS RESOURCES INC	LOTT 23-0841 7LCW	Big Horn	MT	Gamma Ray	CBM
35	M-M'	25-003-22105	PINNACLE GAS RESOURCES INC	VISBORG 22-0841 3FG	Big Horn	MT	Gamma Ray	CBM
36	M-M'	25-003-22097	PINNACLE GAS RESOURCES INC	VISBORG 21-0841 1FG	Big Horn	MT	Gamma Ray	CBM
37	M-M'	25-003-22103	PINNACLE GAS RESOURCES INC	VISBORG 21-0841 7FG	Big Horn	MT	Gamma Ray	CBM
38	M-M'	25-003-22099	PINNACLE GAS RESOURCES INC	VISBORG 21-0841 3FG	Big Horn	MT	Gamma Ray	CBM
39	M-M'	25-003-22085	PINNACLE GAS RESOURCES INC	VISBORG 20-0841 1FG	Big Horn	MT	Gamma Ray	CBM
40	M-M'	25-003-22075	PINNACLE GAS RESOURCES INC	VISBORG 17-0841 15FG	Big Horn	MT	Gamma Ray	CBM
41	M-M'	25-003-22087	PINNACLE GAS RESOURCES INC	VISBORG 20-0841 3FG	Big Horn	MT	Gamma Ray	CBM
42	M-M'	25-003-22089	PINNACLE GAS RESOURCES INC	VISBORG 20-0841 5FG	Big Horn	MT	Gamma Ray	CBM
43	M-M'	25-003-22652	PINNACLE GAS RESOURCES INC	CC 08WP-19-0841	Big Horn	MT	Gamma Ray	CBM
44	M-M'	25-003-22079	PINNACLE GAS RESOURCES INC	VISBORG 19-0841 7FG	Big Horn	MT	Gamma Ray	CBM
45	M-M'	26-90B	UNITED STATES GEOLOGICAL SURVEY	US-80082	Big Horn	MT	Gamma Ray	Coal

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
46	M-M'	26-4B	MT BUREAU OF MINES AND GEOLOGY	US-7731	Big Horn	MT	Gamma Ray	Coal
47	M-M'	26-84B	DECKER COAL	1224-74	Big Horn	MT	Lith-Log	Coal
48	M-M'	26-8B	TOM VESSEL JR.	FEDERAL SHELL NO. 16	Big Horn	MT	Gamma Ray	Coal
49	M-M'	26-3B	MT BUREAU OF MINES AND GEOLOGY	US-7757	Big Horn	MT	Gamma Ray	Coal
50	M-M'	25-003-21871	FIDELITY EXPLORATION & PRODUCTION CO	SPRING CREEK 22RBT-3180	Big Horn	MT	Gamma Ray	CBM
51	M-M'	25-003-21869	FIDELITY EXPLORATION & PRODUCTION CO	SPRING CREEK 11RBT-3180	Big Horn	MT	Gamma Ray	CBM
52	M-M'	25-003-21868	FIDELITY EXPLORATION & PRODUCTION CO	SPRING CREEK 11KG-3180	Big Horn	MT	Gamma Ray	CBM
53	M-M'	25-46B	P. KIEWITS SONS	PPL 216	Big Horn	MT	Lith-Log	Coal
54	M-M'	25-47B	P. KIEWITS SONS	R54	Big Horn	MT	Lith-Log	Coal
55	M-M'	25-48B	P. KIEWITS SONS	PPL 220	Big Horn	MT	Lith-Log	Coal
56	M-M'	25-49B	P. KIEWITS SONS	R53	Big Horn	MT	Lith-Log	Coal
57	M-M'	25-50B	P. KIEWITS SONS	PPL 212	Big Horn	MT	Lith-Log	Coal
58	M-M'	25-33B	P. KIEWITS SONS	PPL 213	Big Horn	MT	Lith-Log	Coal
59	M-M'	25-32B	P. KIEWITS SONS	PPL 214	Big Horn	MT	Lith-Log	Coal
<60>	M-M'	25-2B	MT BUREAU OF MINES AND GEOLOGY	US-7733	Big Horn	MT	Gamma Ray	Coal
61	M-M'	25-003-21644	FIDELITY EXPLORATION & PRODUCTION CO	J. YOUNG 14W-1789	Big Horn	MT	Gamma Ray	CBM
1	N-N'	49-009-21083	REUNION ENERGY COMPANY	MARTIN-FEDERAL 1-5	Converse	WY	Resistivity	Oil/Natural Gas
2	N-N'	49-009-22970	YATES PETROLEUM CORPORATION	BETTY RESERVOIR CS 1	Converse	WY	Gamma Ray	CBM
3	N-N'	49-009-22498	SOUTHPORT EXPLORATION INC	DILTS-FEDERAL 1-30	Converse	WY	Gamma Ray	Oil/Natural Gas
<4>	N-N'	49-009-21321	WOODS PETROLEUM CORPORATION	VERSE UNIT 1	Converse	WY	Gamma Ray	Oil/Natural Gas
5	N-N'	49-0092-2143	DAVIS OIL COMPANY	CORMORANT-FEDERAL 1	Converse	WY	Gamma Ray	Oil/Natural Gas
6	N-N'	49-009-28063	YATES PETROLEUM CORPORATION	MOSQUITO CS FEDERAL 4	Converse	WY	Gamma Ray	CBM
7	N-N'	49-009-27889	COLEMAN OIL & GAS INC	ISENBERGER 23-31	Converse	WY	Gamma Ray	CBM
8	N-N'	49-009-28002	COLEMAN OIL & GAS INC	ISENBERGER 21-31	Converse	WY	Gamma Ray	CBM
9	N-N'	49-009-28083	COLEMAN OIL & GAS INC	ISENBERGER FEDERAL 23-30	Converse	WY	Gamma Ray	CBM
10	N-N'	49-005-49080	COLEMAN OIL & GAS INC	ISENBERGER FEDERAL 34-19	Campbell	WY	Gamma Ray	CBM
11	N-N'	49-005-49600	COLEMAN OIL & GAS INC	ISENBERGER 3-19P	Campbell	WY	Gamma Ray	CBM
12	N-N'	49-005-54563	LANCE OIL & GAS COMPANY INC	P LITTON FED 43-13-4172CA	Campbell	WY	Gamma Ray	CBM
13	N-N'	49-005-54261	LANCE OIL & GAS COMPANY INC	GRUMMAN CS FEDERAL 2	Campbell	WY	Gamma Ray	CBM
14	N-N'	49-005-49091	COLEMAN OIL & GAS INC	ISENBERGER FEDERAL 12-7	Campbell	WY	Gamma Ray	CBM
15	N-N'	49-005-36266	LANCE OIL & GAS COMPANY INC	LITTON FEDERAL 43-1-4172	Campbell	WY	Gamma Ray	CBM
16	N-N'	49-005-54246	YATES PETROLEUM CORPORATION	BOLT CS FEDERAL 1	Campbell	WY	Gamma Ray	CBM
17	N-N'	49-005-31826	BOWERS OIL & GAS INC	BOG STSTE 5-36	Campbell	WY	Gamma Ray	CBM
18	N-N'	49-005-49290	PETRO-CANADA RESOURCES USA INC	DILTS FEDERAL 4271-30-33UW	Campbell	WY	Gamma Ray	CBM
19	N-N'	49-005-38517	PETRO-CANADA RESOURCES USA INC	DILTS FEDERAL 4271-30-21UW	Campbell	WY	Gamma Ray	CBM
20	N-N'	49-005-52278	BILL BARRETT CORPORATION	FEDERAL 23-19-4271	Campbell	WY	Gamma Ray	CBM
21	N-N'	49-005-49314	PETRO-CANADA RESOURCES USA INC	DILTS FEDERAL 4271-18-33UW	Campbell	WY	Gamma Ray	CBM
22	N-N'	49-005-39735	PETRO-CANADA RESOURCES USA INC	DILTS 18-24UW	Campbell	WY	Gamma Ray	CBM
23	N-N'	49-005-39861	PETRO-CANADA RESOURCES USA INC	DILTS 4271-7-34UW	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
24	N-N'	49-005-39732	PETRO-CANADA RESOURCES USA INC	DILTS 4271 7-13UW	Campbell	WY	Gamma Ray	CBM
25	N-N'	49-005-48840	MERIT ENERGY COMPANY	PORCUPINE CBM 34-6-4271	Campbell	WY	Gamma Ray	CBM
26	N-N'	49-005-48841	MERIT ENERGY COMPANY	PORCUPINE CBM 41-6-4271	Campbell	WY	Gamma Ray	CBM
27	N-N'	49-005-49933	LANCE OIL & GAS COMPANY INC	DILTS FED 43-31-4371	Campbell	WY	Gamma Ray	CBM
28	N-N'	49-005-47101	COLEMAN OIL & GAS INC	BRIDLE BIT RANCH 29-14	Campbell	WY	Gamma Ray	CBM
29	N-N'	49-005-47100	COLEMAN OIL & GAS INC	BRIDLE BIT RANCH 29-21	Campbell	WY	Gamma Ray	CBM
30	N-N'	49-005-39634	LANCE OIL & GAS COMPANY INC	ARCH STATE 11-20-4371	Campbell	WY	Gamma Ray	CBM
31	N-N'	49-005-44755	LANCE OIL & GAS COMPANY INC	THUNDERBASIN COAL FED 14-17-4371	Campbell	WY	Gamma Ray	CBM
32	N-N'	49-005-44751	HILCORP ENERGY COMPANY	FEDERAL 41-18-4371	Campbell	WY	Gamma Ray	CBM
33	N-N'	49-005-36472	LANCE OIL & GAS COMPANY INC	LEADBETTER 43-7-4371	Campbell	WY	Gamma Ray	CBM
34	N-N'	49-005-36471	LANCE OIL & GAS COMPANY INC	LEADBETTER 41-7-4371	Campbell	WY	Gamma Ray	CBM
<35>	N-N'	49-005-36462	LANCE OIL & GAS COMPANY INC	STUART 13-5-4371	Campbell	WY	Gamma Ray	CBM
36	N-N'	49-005-34533	LANCE OIL & GAS COMPANY INC	FLOCCHINI 14-32	Campbell	WY	Gamma Ray	CBM
37	N-N'	49-005-48411	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 31-31-4471	Campbell	WY	Gamma Ray	CBM
38	N-N'	49-005-46034	LANCE OIL & GAS COMPANY INC	STUART FEDERAL 23-30-4471	Campbell	WY	Gamma Ray	CBM
39	N-N'	49-005-46014	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 14-19-4471	Campbell	WY	Gamma Ray	CBM
40	N-N'	49-005-43349	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 41-24-4472	Campbell	WY	Gamma Ray	CBM
41	N-N'	49-005-36647	LANCE OIL & GAS COMPANY INC	EAST FORK FEDERAL 32-13	Campbell	WY	Gamma Ray	CBM
42	N-N'	49-005-32860	LANCE OIL & GAS COMPANY INC	WEST FORK FLOCCHINI 43-12	Campbell	WY	Gamma Ray	CBM
43	N-N'	49-005-36635	LANCE OIL & GAS COMPANY INC	DURHAM RANCH FEDERAL 34-1-4472	Campbell	WY	Gamma Ray	CBM
44	N-N'	49-005-36636	LANCE OIL & GAS COMPANY INC	EAST FORK FEDERAL 41-1	Campbell	WY	Gamma Ray	CBM
<45>	N-N'	49-005-31363	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 33-36	Campbell	WY	Gamma Ray	CBM
46	N-N'	49-005-33098	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 34-25	Campbell	WY	Gamma Ray	CBM
47	N-N'	49-005-39058	LANCE OIL & GAS COMPANY INC	BISON CS STATE 41-25-4572	Campbell	WY	Gamma Ray	CBM
48	N-N'	49-005-31453	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 7-22-24	Campbell	WY	Gamma Ray	CBM
49	N-N'	49-005-39855	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 14-13-4572	Campbell	WY	Gamma Ray	CBM
50	N-N'	49-005-49072	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 12-13-4572	Campbell	WY	Gamma Ray	CBM
51	N-N'	49-005-48924	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 23-12-4572	Campbell	WY	Gamma Ray	CBM
52	N-N'	49-005-44968	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 34-1-4572C	Campbell	WY	Gamma Ray	CBM
53	N-N'	49-005-43255	LANCE OIL & GAS COMPANY INC	DURHAM RANCH 12-1-4572	Campbell	WY	Gamma Ray	CBM
54	N-N'	49-005-39244	WILLIAMS PRODUCTION RMT COMPANY	WAGENSEN STATE 14-36-4672	Campbell	WY	Gamma Ray	CBM
55	N-N'	49-005-39245	WILLIAMS PRODUCTION RMT COMPANY	WAGENSEN STATE 21-36-4672	Campbell	WY	Gamma Ray	CBM
56	N-N'	49-005-44842	WILLIAMS PRODUCTION RMT COMPANY	DURHAM RANCH FED 12-25-4672	Campbell	WY	Gamma Ray	CBM
<57>	N-N'	49-005-37031	BILL BARRETT CORPORATION	THREEMILE CREEK FED 23-41	Campbell	WY	Gamma Ray	CBM
58	N-N'	49-005-37040	BILL BARRETT CORPORATION	THREEMILE CREEK FED 23-12	Campbell	WY	Gamma Ray	CBM
59	N-N'	49-005-33203	WILLIAMS PRODUCTION RMT COMPANY	EDWARDS 13-14	Campbell	WY	Gamma Ray	CBM
60	N-N'	49-005-30927	WILLIAMS PRODUCTION RMT COMPANY	FEDERAL 611-14	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
61	N-N'	49-005-31173	WILLIAMS PRODUCTION RMT COMPANY	PICKREL 11-12	Campbell	WY	Gamma Ray	CBM
62	N-N'	49-005-35132	WILLIAMS PRODUCTION RMT COMPANY	LAUREL 13-2	Campbell	WY	Gamma Ray	CBM
63	N-N'	49-005-30921	LANCE OIL & GAS COMPANY INC	FEDERAL 1735-14	Campbell	WY	Gamma Ray	CBM
64	N-N'	49-005-32653	LANCE OIL & GAS COMPANY INC	HAIGHT 41-34	Campbell	WY	Gamma Ray	CBM
65	N-N'	49-005-31629	LANCE OIL & GAS COMPANY INC	FEDERAL 727-42	Campbell	WY	Gamma Ray	CBM
66	N-N'	49-005-31020	LANCE OIL & GAS COMPANY INC	FEDERAL 722-34	Campbell	WY	Gamma Ray	CBM
67	N-N'	49-005-30894	LANCE OIL & GAS COMPANY INC	PITTMAN 22-31	Campbell	WY	Gamma Ray	CBM
68	N-N'	49-005-31524	LORAL OPERATING LLC	HOE CREEK 15-22	Campbell	WY	Gamma Ray	CBM
69	N-N'	49-005-31728	LANCE OIL & GAS COMPANY INC	CARTER 9-44	Campbell	WY	Gamma Ray	CBM
70	N-N'	49-005-31734	LANCE OIL & GAS COMPANY INC	CARTER 9-22	Campbell	WY	Gamma Ray	CBM
71	N-N'	49-005-30491	LORAL OPERATING LLC	LYNDE TRUST 4-23	Campbell	WY	Gamma Ray	CBM
<72>	N-N'	49-005-32933	LORAL OPERATING LLC	FEDERAL 32-44 48-72	Campbell	WY	Gamma Ray	CBM
73	N-N'	49-005-31854	WILLIAMS PRODUCTION RMT COMPANY	HEILAND 41-32	Campbell	WY	Gamma Ray	CBM
74	N-N'	49-005-31664	LORAL OPERATING LLC	BONE PILE 29-23	Campbell	WY	Gamma Ray	CBM
75	N-N'	49-005-42283	LORAL OPERATING LLC	FEDERAL BONE PILE 29-21	Campbell	WY	Gamma Ray	CBM
76	N-N'	49-005-33869	HILCORP ENERGY COMPANY	CBM FEDERAL 12-20	Campbell	WY	Gamma Ray	CBM
77	N-N'	49-005-44618	HILCORP ENERGY COMPANY	CBM FEDERAL 13-17D	Campbell	WY	Gamma Ray	CBM
78	N-N'	49-005-40053	HILCORP ENERGY COMPANY	CBM 44-7	Campbell	WY	Gamma Ray	CBM
79	N-N'	49-005-40056	HILCORP ENERGY COMPANY	CBM 22-7	Campbell	WY	Gamma Ray	CBM
80	N-N'	49-005-40058	HILCORP ENERGY COMPANY	CBM 24-6	Campbell	WY	Gamma Ray	CBM
81	N-N'	49-005-39835	HILCORP ENERGY COMPANY	CBM 11-6	Campbell	WY	Gamma Ray	CBM
82	N-N'	49-005-37903	LORAL OPERATING LLC	BONE PILE 5-31-49-72	Campbell	WY	Gamma Ray	CBM
83	N-N'	49-005-42610	LORAL OPERATING LLC	SHAFTSTALL FED 16-25-49-73A	Campbell	WY	Gamma Ray	CBM
84	N-N'	49-005-32216	LORAL OPERATING LLC	SHAFTSTALL 8-25-49-73 WY	Campbell	WY	Gamma Ray	CBM
85	N-N'	49-005-37743	LORAL OPERATING LLC	SWANSONG 9-24-49-73 A	Campbell	WY	Gamma Ray	CBM
<86>	N-N'	49-005-36833	LORAL OPERATING LLC	SWANSONG 1-24-49-73 A	Campbell	WY	Gamma Ray	CBM
<87>	N-N'	49-005-48160	WILLIAMS PRODUCTION RMT COMPANY	SWANSONG RANCH FED 43-13-4973	Campbell	WY	Gamma Ray	CBM
88	N-N'	49-005-42494	WILLIAMS PRODUCTION RMT COMPANY	SWANSONG 21-13-4973	Campbell	WY	Gamma Ray	CBM
89	N-N'	49-005-42085	WILLIAMS PRODUCTION RMT COMPANY	STONE GATE 12-12-4973	Campbell	WY	Gamma Ray	CBM
90	N-N'	49-005-49765	WILLIAMS PRODUCTION RMT COMPANY	HARRIS 23-1-4973	Campbell	WY	Gamma Ray	CBM
91	N-N'	49-005-42922	PATRIOT ENERGY RESOURCES	ST 24-36-5073 SM	Campbell	WY	Gamma Ray	CBM
92	N-N'	49-005-40129	PATRIOT ENERGY RESOURCES	STATE 21-36-5073WY	Campbell	WY	Gamma Ray	CBM
93	N-N'	49-005-36341	PATRIOT ENERGY RESOURCES	TRAIL RIDGE FEE 32-25-5073 WY	Campbell	WY	Gamma Ray	CBM
94	N-N'	49-005-40968	PATRIOT ENERGY RESOURCES	WESTOVER FEE 14-19-5072WY	Campbell	WY	Gamma Ray	CBM
95	N-N'	49-005-44408	PURE PETROLEUM LLC	BELL NOB 7-19-50-72 A	Campbell	WY	Gamma Ray	CBM
96	N-N'	49-005-50237	JIMS WATER SERVICE INC	GRAMS WEST FEDERAL 34-1802	Campbell	WY	Gamma Ray	CBM
97	N-N'	49-005-50232	JIMS WATER SERVICE INC	GRAMS WEST FEDERAL 43-1802	Campbell	WY	Gamma Ray	CBM
98	N-N'	49-005-43280	JIMS WATER SERVICE INC	GRAMS 41A-1802	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
99	N-N'	49-005-40576	ROCKY MOUNTAIN GAC INC.	BARBOUR 7-42	Campbell	WY	Gamma Ray	CBM
100	N-N'	49-005-29878	ROCKY MOUNTAIN GAC INC.	LORENE 6-43	Campbell	WY	Gamma Ray	CBM
101	N-N'	49-005-40567	ROCKY MOUNTAIN GAC INC.	BARBOUR 31-44	Campbell	WY	Gamma Ray	CBM
102	N-N'	49-005-56472	ROCKY MOUNTAIN GAC INC.	WALLS 31-41-51-72D	Campbell	WY	Gamma Ray	CBM
103	N-N'	49-005-56470	ROCKY MOUNTAIN GAC INC.	WALLS 30-43-51-72D	Campbell	WY	Gamma Ray	CBM
104	N-N'	49-005-57361	ROCKY MOUNTAIN GAC INC.	WALLS 30-41-51-72D	Campbell	WY	Gamma Ray	CBM
<105>	N-N'	49-005-37989	ROCKY MOUNTAIN GAC INC.	ECHO 9-19-A	Campbell	WY	Gamma Ray	CBM
106	N-N'	49-005-30037	ROCKY MOUNTAIN GAC INC.	ECHO 2-19	Campbell	WY	Gamma Ray	CBM
107	N-N'	49-005-30533	MEDALLION EXPLORATION	RAWHIDE 7-18	Campbell	WY	Gamma Ray	CBM
108	N-N'	49-005-30519	MEDALLION EXPLORATION	RAWHIDE 7-7	Campbell	WY	Gamma Ray	CBM
109	N-N'	49-005-30068	REDSTONE RESOURCES INC	ROUGH DRAW S-6-10	Campbell	WY	Gamma Ray	CBM
110	N-N'	49-005-31786	BLACKSTONE OPERATING INC	MARQUISS 24D-3122	Campbell	WY	Gamma Ray	CBM
<111>	N-N'	49-005-43153	BLACKSTONE OPERATING INC	STATE 32D-3623	Campbell	WY	Gamma Ray	CBM
112	N-N'	49-005-43155	BLACKSTONE OPERATING INC	STATE 21D-3623	Campbell	WY	Gamma Ray	CBM
113	N-N'	49-005-35009	DEVON ENERGY PRODUCTION COMPANY	WARE 12C-2523	Campbell	WY	Gamma Ray	CBM
114	N-N'	49-005-20225	CRA INCORPORATED	ODEKOVEN 23-1	Campbell	WY	Resistivity	Oil/Natural Gas
115	N-N'	49-005-38618	DEVON ENERGY PRODUCTION COMPANY	HUSKINSON 34WA-1423	Campbell	WY	Gamma Ray	CBM
116	N-N'	49-005-38695	DEVON ENERGY PRODUCTION COMPANY	TWENTY MILE 23WA-1423	Campbell	WY	Gamma Ray	CBM
117	N-N'	49-005-44071	DEVON ENERGY PRODUCTION COMPANY	TWENTY MILE 41D-1523	Campbell	WY	Gamma Ray	CBM
118	N-N'	49-005-44028	DEVON ENERGY PRODUCTION COMPANY	HINKES 34WA-1023	Campbell	WY	Gamma Ray	CBM
119	N-N'	49-005-32487	DEVON ENERGY PRODUCTION COMPANY	HINKES 32WA-1023	Campbell	WY	Gamma Ray	CBM
120	N-N'	49-005-33714	DEVON ENERGY PRODUCTION COMPANY	LANDECK 34WA-323	Campbell	WY	Gamma Ray	CBM
121	N-N'	49-005-32907	DEVON ENERGY PRODUCTION COMPANY	LANDECK 23WA-323	Campbell	WY	Gamma Ray	CBM
122	N-N'	49-005-40221	DEVON ENERGY PRODUCTION COMPANY	SOUKUP DRAW CS STATE 11	Campbell	WY	Gamma Ray	CBM
123	N-N'	49-005-45579	DEVON ENERGY PRODUCTION COMPANY	SCOTT 14WA-3433	Campbell	WY	Gamma Ray	CBM
124	N-N'	49-005-45478	DEVON ENERGY PRODUCTION COMPANY	SCOTT 32WA-3333	Campbell	WY	Gamma Ray	CBM
125	N-N'	49-005-32993	DEVON ENERGY PRODUCTION COMPANY	SCOTT FEDERAL 14LC-2833	Campbell	WY	Gamma Ray	CBM
126	N-N'	49-005-22884	SAMEDAN OIL CORPORATION	KIRBY 1	Campbell	WY	Resistivity	Oil/Natural Gas
127	N-N'	49-005-49662	REDSTONE RESOURCES INC	SCOTT 23LC-2133	Campbell	WY	Gamma Ray	CBM
128	N-N'	49-005-40710	REDSTONE RESOURCES INC	HENSLEY 24-16LC	Campbell	WY	Gamma Ray	CBM
129	N-N'	49-005-52283	PINNACLE GAS RESOURCES INC	WC 03CC-16-53-73	Campbell	WY	Gamma Ray	CBM
130	N-N'	49-005-52748	PINNACLE GAS RESOURCES INC	WC 05WP-09-53-73	Campbell	WY	Gamma Ray	CBM
131	N-N'	49-005-51272	PINNACLE GAS RESOURCES INC	BC 09WP-5-53-73	Campbell	WY	Gamma Ray	CBM
132	N-N'	49-005-51406	PINNACLE GAS RESOURCES INC	BC 03WP-5-53-73	Campbell	WY	Gamma Ray	CBM
133	N-N'	49-005-48067	PINNACLE GAS RESOURCES INC	BC 5WP-32-54-73	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
134	N-N'	49-005-48069	PINNACLE GAS RESOURCES INC	BC 13WP-29-54-73	Campbell	WY	Gamma Ray	CBM
135	N-N'	49-005-39098	YATES PETROLEUM CORPORATION	CARSON CS STATE 4	Campbell	WY	Gamma Ray	CBM
136	N-N'	49-005-51289	PINNACLE GAS RESOURCES INC	HC 11WP-19-54-73	Campbell	WY	Gamma Ray	CBM
137	N-N'	49-005-54145	PINNACLE GAS RESOURCES INC	HC 13-18-54-73	Campbell	WY	Gamma Ray	CBM
138	N-N'	49-005-46419	LANCE OIL & GAS COMPANY INC	C&F RANCH 32-13-5474W	Campbell	WY	Gamma Ray	CBM
<139>	N-N'	49-005-49629	LANCE OIL & GAS COMPANY INC	F ODEKOVEN TRUST 34-12-5474LC	Campbell	WY	Gamma Ray	CBM
140	N-N'	49-005-34861	LANCE OIL & GAS COMPANY INC	COX 23-12-5474W	Campbell	WY	Gamma Ray	CBM
141	N-N'	49-005-53473	PINNACLE GAS RESOURCES INC	HC 13WP-01-54-74	Campbell	WY	Gamma Ray	CBM
142	N-N'	49-005-29479	DOMINION EXPLORATION & PRODUCTION INC	REED 14-2	Campbell	WY	Gamma Ray	Oil/Natural Gas
143	N-N'	49-005-52648	HUBER J M CORP	SHARP 1CKW-35-55-74	Campbell	WY	Gamma Ray	CBM
144	N-N'	49-005-52022	HUBER J M CORP	AMENDE 13 CKW-26 585-74	Campbell	WY	Gamma Ray	CBM
145	N-N'	49-005-52540	HUBER J M CORP	SHARP 7CKW-27 55-74	Campbell	WY	Gamma Ray	CBM
146	N-N'	49-005-51579	HUBER J M CORP	SORENSON 13CKW-22 55-74	Campbell	WY	Gamma Ray	CBM
147	N-N'	49-005-44899	HUBER J M CORP	SORENSON 2CKW-2155-74	Campbell	WY	Gamma Ray	CBM
148	N-N'	49-005-46095	HUBER J M CORP	STONES THROW STATE 11W-16 55-74	Campbell	WY	Gamma Ray	CBM
149	N-N'	49-005-37458	HUBER J M CORP	STONES THROW FEDERAL 1CN-17 55-74	Campbell	WY	Gamma Ray	CBM
150	N-N'	49-005-49853	CONTINENTAL PRODUCTION CO LLC	FED 13-8-W	Campbell	WY	Gamma Ray	CBM
151	N-N'	49-005-50079	CONTINENTAL PRODUCTION CO LLC	FED 1-7-W	Campbell	WY	Gamma Ray	CBM
152	N-N'	49-005-42055	DEVON ENERGY PRODUCTION COMPANY	WERNER 6WA-11	Campbell	WY	Gamma Ray	CBM
153	N-N'	49-005-39704	PURE PETROLEUM LLC	LXFEE 1-1C	Campbell	WY	Gamma Ray	CBM
154	N-N'	49-005-41131	CONTINENTAL PRODUCTION CO LLC	LXS 14-36AX	Campbell	WY	Gamma Ray	CBM
<155>	N-N'	49-005-40937	CONTINENTAL PRODUCTION CO LLC	LXF 1-35-CX	Campbell	WY	Gamma Ray	CBM
156	N-N'	49-005-37636	CONTINENTAL PRODUCTION CO LLC	LXF 10-26C	Campbell	WY	Gamma Ray	CBM
157	N-N'	49-005-57354	HUBER J M CORP	MANIGAULT FED 3CKW-26 56-75	Campbell	WY	Gamma Ray	CBM
158	N-N'	49-005-41238	YATES PETROLEUM CORPORATION	GABRIELLE CS 30	Campbell	WY	Gamma Ray	CBM
159	N-N'	49-005-41241	YATES PETROLEUM CORPORATION	GABRIELLE CS 27	Campbell	WY	Gamma Ray	CBM
160	N-N'	49-005-40530	YATES PETROLEUM CORPORATION	KLINE DRAW CS STATE 48	Campbell	WY	Gamma Ray	CBM
161	N-N'	49-005-40534	YATES PETROLEUM CORPORATION	KLINE DRAW CS STATE 44	Campbell	WY	Gamma Ray	CBM
162	N-N'	49-005-52786	THE THERMO COMPANY	MANIGAULT FED 1W-17	Campbell	WY	Gamma Ray	CBM
163	N-N'	49-005-57811	YATES PETROLEUM CORPORATION	LX BAR CS FEDERAL 19	Campbell	WY	Gamma Ray	CBM
164	N-N'	49-005-57822	YATES PETROLEUM CORPORATION	LX BAR CS FEDERAL 3	Campbell	WY	Gamma Ray	CBM
<165>	N-N'	49-005-57813	YATES PETROLEUM CORPORATION	LX BAR CS FEDERAL 8	Campbell	WY	Gamma Ray	CBM
166	N-N'	49-005-55801	CONTINENTAL PRODUCTION CO LLC	MANIGAULT FED 17CKW-36 57-76	Campbell	WY	Gamma Ray	CBM
167	N-N'	49-005-39214	YATES PETROLEUM CORPORATION	TRACK 71 CS DEEP ST 8	Campbell	WY	Gamma Ray	CBM
168	N-N'	49-005-53368	STORM CAT ENERGY USA OPERATING	LX BAR FED 34-26-5776CW	Campbell	WY	Gamma Ray	CBM
169	N-N'	49-005-53370	STORM CAT ENERGY USA OPERATING	LX BAR FED 32-26-5776CW	Campbell	WY	Gamma Ray	CBM
170	N-N'	49-005-53383	STORM CAT ENERGY USA OPERATING	LX BAR FED 14-23-5776CW	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
171	N-N'	49-005-56350	STORM CAT ENERGY USA OPERATING	PEE GEE FEDERAL 11-22-5776CW	Campbell	WY	Gamma Ray	CBM
172	N-N'	49-005-56344	STORM CAT ENERGY USA OPERATING	PEE GEE FEDERAL 15-15-5776CW	Campbell	WY	Gamma Ray	CBM
173	N-N'	49-005-55842	ST MARY LAND & EXPLORATION	REMINGTON 57-76-15-06B	Campbell	WY	Gamma Ray	CBM
174	N-N'	49-005-57986	ST MARY LAND & EXPLORATION	FEDERAL 57-76-10-10B	Campbell	WY	Gamma Ray	CBM
175	N-N'	49-005-36612	PINNACLE GAS RESOURCES INC	FC 15WP-03-57-76	Campbell	WY	Gamma Ray	CBM
176	N-N'	49-005-22406	GOODSTEIN FRED	GOODSTEIN-ATLANTIC 57-3-3	Campbell	WY	Gamma Ray	Oil/Natural Gas
177	N-N'	49-005-37007	PINNACLE GAS RESOURCES INC	FC T38B-A	Campbell	WY	Gamma Ray	CBM
178	N-N'	25-075-22096	DAVIS OIL COMPANY	NO. 1 CHEYENNE STATE 1	Powder River	MT	Gamma Ray	CBM
179	N-N'	32-31B	TRUE OIL COMPANY	HOPE 41-27	Powder River	MT	Resistivity	Coal
180	N-N'	32-16B	WESTRANS PETROLEUM INC	14-11 FEDERAL	Powder River	MT	Resistivity	Coal
181	N-N'	32-17B	MT BUREAU OF MINES AND GEOLOGY	SM-11	Powder River	MT	Lith-Log	Coal
<182>	N-N'	32-8B	UNITED STATES GEOLOGICAL SURVEY	US-77113	Powder River	MT	Gamma Ray	Coal
183	N-N'	32-1B	USGS	US-77114	Powder River	MT	Gamma Ray	Coal
184	N-N'	24-14B	MT BUREAU OF MINES AND GEOLOGY	SM-9	Powder River	MT	Lith-Log	Coal
185	N-N'	17-104Br	MT BUREAU OF MINES AND GEOLOGY	SM-6	Powder River	MT	Lith-Log	Coal
186	N-N'	17-103Br	MT BUREAU OF MINES AND GEOLOGY	SM-7	Powder River	MT	Lith-Log	Coal
187	N-N'	17-107Br	MT BUREAU OF MINES AND GEOLOGY	SM-3	Powder River	MT	Lith-Log	Coal
188	N-N'	17-37Br	MT BUREAU OF MINES AND GEOLOGY	SM-2	Powder River	MT	Lith-Log	Coal
189	N-N'	17-21Br	USGS	79MB-9	Powder River	MT	Gamma Ray	Coal
190	N-N'	9-51Br	USGS	79MB-10	Powder River	MT	Gamma Ray	Coal
191	N-N'	9-35Br	MT BUREAU OF MINES AND GEOLOGY	SH-7122	Powder River	MT	Lith-Log	Coal
192	N-N'	9-36Br	MT BUREAU OF MINES AND GEOLOGY	SH-7128	Powder River	MT	Lith-Log	Coal
193	N-N'	9-42Br	USGS	79MB-14	Powder River	MT	Gamma Ray	Coal
194	N-N'	25-075-22279	POWDER RIVER GAS	STEVENS 16-18X	Powder River	MT	Gamma Ray	CBM
195	N-N'	25-075-22286	POWDER RIVER GAS	STEVENS 15-7-0648 TS	Powder River	MT	Gamma Ray	CBM
196	N-N'	25-075-22255	ROCKY MOUNTAIN GAS	CASTLE ROCK 6AP	Powder River	MT	Gamma Ray	CBM
197	N-N'	25-075-22287	POWDER RIVER GAS	STEVENS 13-8-0648 TS	Powder River	MT	Gamma Ray	CBM
198	N-N'	10-33Br	USGS	79MB-15	Powder River	MT	Gamma Ray	Coal
199	N-N'	25-075-22245	ROCKY MOUNTAIN GAS	CASTLE ROCK 2P	Powder River	MT	Gamma Ray	CBM
200	N-N'	25-075-22244	ROCKY MOUNTAIN GAS	CASTLE ROCK 1P	Powder River	MT	Gamma Ray	CBM
201	N-N'	25-075-22250	ROCKY MOUNTAIN GAS	CASTLE ROCK 3A	Powder River	MT	Gamma Ray	CBM
202	N-N'	25-075-22248	ROCKY MOUNTAIN GAS	CASTLE ROCK 5AP	Powder River	MT	Gamma Ray	CBM
203	N-N'	10-22Br	USGS	79MB-21	Powder River	MT	Gamma Ray	Coal
204	N-N'	25-075-22246	ROCKY MOUNTAIN GAS	CASTLE ROCK 3P	Powder River	MT	Gamma Ray	CBM
205	N-N'	10-7Br	USGS	79MB-16	Powder River	MT	Gamma Ray	Coal
206	N-N'	25-075-22278	POWDER RIVER GAS	EB RANCH 2-28X	Powder River	MT	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
207	N-N'	2-69Br	MT BUREAU OF MINES AND GEOLOGY	SH-7118	Powder River	MT	Lith-Log	Coal
1	O-O'	49-009-28119	PETRO-CANADA RESOURCES USA INC	ST 3873-36-23WA	Converse	WY	Gamma Ray	CBM
2	O-O'	49-009-28003	SOUTHWESTERN PRODUCTION CORPORATION	HORNBUCKLE CBM FED 2128-3873	Converse	WY	Gamma Ray	CBM
3	O-O'	49-009-27928	BLACK DIAMOND ENERGY INC	MANNING 32-18-3873	Converse	WY	Gamma Ray	CBM
4	O-O'	49-009-21308	MERIT ENERGY COMPANY	7 POWELL II 7	Converse	WY	Gamma Ray	Oil/Natural Gas
5	O-O'	49-009-21243	MERIT ENERGY COMPANY	POWELL II UN W-37	Converse	WY	Gamma Ray	Oil/Natural Gas
6	O-O'	49-009-21142	MERIT ENERGY COMPANY	MOORE RANCH FED 9947 15-1	Converse	WY	Gamma Ray	Oil/Natural Gas
<7>	O-O'	49-009-22309	MERIT ENERGY COMPANY	MOORE W-50746 2-3	Converse	WY	Gamma Ray	Oil/Natural Gas
8	O-O'	49-005-51773	BILL BARRETT CORPORATION	MOORE STATE 21-16-4174	Campbell	WY	Gamma Ray	CBM
9	O-O'	49-005-52181	BILL BARRETT CORPORATION	FEDERAL 34-9-4174	Campbell	WY	Gamma Ray	CBM
10	O-O'	49-005-52176	BILL BARRETT CORPORATION	FEDERAL 23-9-4174	Campbell	WY	Gamma Ray	CBM
11	O-O'	49-005-52167	BILL BARRETT CORPORATION	FEDERAL 12-9-4174	Campbell	WY	Gamma Ray	CBM
12	O-O'	49-005-52173	BILL BARRETT CORPORATION	FEDERAL 21-9-4174	Campbell	WY	Gamma Ray	CBM
13	O-O'	49-005-48912	YATES PETROLEUM CORP	DIETZ CS 4	Campbell	WY	Gamma Ray	CBM
14	O-O'	49-005-51338	BILL BARRETT CORPORATION	DIAMOND T 43-5-4174	Campbell	WY	Gamma Ray	CBM
15	O-O'	49-005-48910	YATES PETROLEUM CORP	DIETZ CS 2	Campbell	WY	Gamma Ray	CBM
16	O-O'	49-005-52908	YATES PETROLEUM CORP	BIGHORN CS FEDERAL 12	Campbell	WY	Gamma Ray	CBM
17	O-O'	49-005-52905	YATES PETROLEUM CORP	BIGHORN CS FEDERAL 9	Campbell	WY	Gamma Ray	CBM
18	O-O'	49-005-48384	YATES PETROLEUM CORP	OLSWICK CS 8	Campbell	WY	Gamma Ray	CBM
19	O-O'	49-005-53041	YATES PETROLEUM CORP	BIGHORN CS FEDERAL 5	Campbell	WY	Gamma Ray	CBM
20	O-O'	49-005-53049	YATES PETROLEUM CORP	CUSTER CS FEDERAL 10	Campbell	WY	Gamma Ray	CBM
21	O-O'	49-005-53047	YATES PETROLEUM CORP	CUSTER CS FEDERAL 5	Campbell	WY	Gamma Ray	CBM
22	O-O'	49-005-53045	YATES PETROLEUM CORP	CUSTER CS FEDERAL 2	Campbell	WY	Gamma Ray	CBM
23	O-O'	49-005-53613	WILLIAMS PRODUCTION RMT COMPANY	ALL NIGHT CREEK UNIT 14-17-4274	Campbell	WY	Gamma Ray	CBM
24	O-O'	49-005-53612	WILLIAMS PRODUCTION RMT COMPANY	ALL NIGHT CREEK UNIT 12-17-4274	Campbell	WY	Gamma Ray	CBM
25	O-O'	49-005-49779	WILLIAMS PRODUCTION RMT COMPANY	ANCU 14-8-4274	Campbell	WY	Gamma Ray	CBM
26	O-O'	49-005-49331	WILLIAMS PRODUCTION RMT COMPANY	IBERLIN RANCH 12-8-4274	Campbell	WY	Gamma Ray	CBM
27	O-O'	49-005-49778	WILLIAMS PRODUCTION RMT COMPANY	ANCU 41-7-4274	Campbell	WY	Gamma Ray	CBM
28	O-O'	49-005-49773	WILLIAMS PRODUCTION RMT COMPANY	ANCU 34-6-4274	Campbell	WY	Gamma Ray	CBM
29	O-O'	49-005-49327	WILLIAMS PRODUCTION RMT COMPANY	ANCU IBERLIN RANCH 21-6-4274	Campbell	WY	Gamma Ray	CBM
30	O-O'	49-005-49768	WILLIAMS PRODUCTION RMT COMPANY	ANCU 323-31-4374	Campbell	WY	Gamma Ray	CBM
31	O-O'	49-005-49767	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-31-4374	Campbell	WY	Gamma Ray	CBM
32	O-O'	49-005-49794	WILLIAMS PRODUCTION RMT COMPANY	ANCU 23-30-4374	Campbell	WY	Gamma Ray	CBM
33	O-O'	49-005-49793	WILLIAMS PRODUCTION RMT COMPANY	ANCU 21-30-4374	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
34	O-O'	49-005-49663	WILLIAMS PRODUCTION RMT COMPANY	ANCU ATWOOD 14-19-4374	Campbell	WY	Gamma Ray	CBM
35	O-O'	49-005-51279	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD 43-24-4375	Campbell	WY	Gamma Ray	CBM
<36>	O-O'	49-005-51280	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD 32-24-4375	Campbell	WY	Gamma Ray	CBM
37	O-O'	49-005-51281	WILLIAMS PRODUCTION RMT COMPANY	ATWOOD 41-24-4375	Campbell	WY	Gamma Ray	CBM
38	O-O'	49-005-50756	WILLIAMS PRODUCTION RMT COMPANY	SPOMER 14-18-4374	Campbell	WY	Gamma Ray	CBM
39	O-O'	49-005-50757	WILLIAMS PRODUCTION RMT COMPANY	SPOMER 23-18-4347	Campbell	WY	Gamma Ray	CBM
40	O-O'	49-005-51037	WILLIAMS PRODUCTION RMT COMPANY	GILBERTZ FEDERAL 21-18-4374	Campbell	WY	Gamma Ray	CBM
41	O-O'	49-005-53098	WILLIAMS PRODUCTION RMT COMPANY	GILBERTZ FED 23-7-437BG	Campbell	WY	Gamma Ray	CBM
42	O-O'	49-005-53111	BILL BARRETT CORPORATION	HARTZOG FEDERAL 21-7-4374BG	Campbell	WY	Gamma Ray	CBM
43	O-O'	49-005-53089	BILL BARRETT CORPORATION	HARTZOG FEDERAL 21-6-4374BG	Campbell	WY	Gamma Ray	CBM
44	O-O'	49-005-53084	BILL BARRETT CORPORATION	HARTZOG 12-31-4474BG	Campbell	WY	Gamma Ray	CBM
45	O-O'	49-005-52643	BILL BARRETT CORPORATION	HARTZOG STATE 41-36-4475BG	Campbell	WY	Gamma Ray	CBM
46	O-O'	49-005-54540	BILL BARRETT CORPORATION	HARTZOG FEDERAL 23-25-4475BG	Campbell	WY	Gamma Ray	CBM
47	O-O'	49-005-56979	LANCE OIL & GAS COMPANY INC	CAMBLIN 12-25-4475BG	Campbell	WY	Gamma Ray	CBM
48	O-O'	49-005-52356	BILL BARRETT CORPORATION	HARTZOG 41-26-4475BG	Campbell	WY	Gamma Ray	CBM
49	O-O'	49-005-53076	BILL BARRETT CORPORATION	HARTZOG 34-23-4475BG	Campbell	WY	Gamma Ray	CBM
50	O-O'	49-005-53090	LANCE OIL & GAS COMPANY INC	HARTZOG FED 43-23-4475BG	Campbell	WY	Gamma Ray	CBM
51	O-O'	49-005-52429	BILL BARRETT CORPORATION	HARTZOG FED 21-23-4475BG	Campbell	WY	Gamma Ray	CBM
52	O-O'	49-005-52475	XTO ENERGY INC	HARTZOG 23-14-4475BG	Campbell	WY	Gamma Ray	CBM
53	O-O'	49-005-53074	XTO ENERGY INC	HARTZOG FEDERAL 21-14-4475BG	Campbell	WY	Gamma Ray	CBM
54	O-O'	49-005-53103	XTO ENERGY INC	HARTZOG FEDERAL 14-11-4475BG	Campbell	WY	Gamma Ray	CBM
55	O-O'	49-005-53086	XTO ENERGY INC	HARTZOG 12-11-4475BG	Campbell	WY	Gamma Ray	CBM
56	O-O'	49-005-53091	XTO ENERGY INC	HARTZOG FEDERAL 14-2-4475BG	Campbell	WY	Gamma Ray	CBM
57	O-O'	49-005-53093	XTO ENERGY INC	HARTZOG FEDERAL 43-3-4475BG	Campbell	WY	Gamma Ray	CBM
58	O-O'	49-005-55016	XTO ENERGY INC	HARTZOG 41-3-4475BG	Campbell	WY	Gamma Ray	CBM
<59>	O-O'	49-005-55033	XTO ENERGY INC	HARTZOG 14-35-4575BG	Campbell	WY	Gamma Ray	CBM
60	O-O'	49-005-55034	XTO ENERGY INC	HARTZOG 12-35-457BG	Campbell	WY	Gamma Ray	CBM
61	O-O'	49-005-46646	BILL BARRETT CORPORATION	GREASEWOOD 14-26-4575BG	Campbell	WY	Gamma Ray	CBM
62	O-O'	49-005-35307	COLEMAN OIL &GAS INC	GROVES 11-26	Campbell	WY	Gamma Ray	CBM
63	O-O'	49-005-35203	COLEMAN OIL &GAS INC	GROVES 13-23	Campbell	WY	Gamma Ray	CBM
64	O-O'	49-005-35202	COLEMAN OIL &GAS INC	GROVES 11-23	Campbell	WY	Gamma Ray	CBM
65	O-O'	49-005-35302	COLEMAN OIL &GAS INC	GROVES 13-14	Campbell	WY	Gamma Ray	CBM
66	O-O'	49-005-51742	COLEMAN OIL &GAS INC	ACKER 24-11	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
67	O-O'	49-005-51743	COLEMAN OIL &GAS INC	ACKER 13-11	Campbell	WY	Gamma Ray	CBM
68	O-O'	49-005-51744	COLEMAN OIL &GAS INC	ACKER 11-11	Campbell	WY	Gamma Ray	CBM
69	O-O'	49-005-50441	BLACK DIAMOND ENERGY INC	SAPPINGTON 33-3-4575	Campbell	WY	Gamma Ray	CBM
70	O-O'	49-005-51844	BLACK DIAMOND ENERGY INC	SAPPINGTON 31-3-4575	Campbell	WY	Gamma Ray	CBM
71	O-O'	49-005-46817	PENNACO ENERGY INCORPORATED	INNES 15-34-46-75 BG	Campbell	WY	Gamma Ray	CBM
72	O-O'	49-005-46811	PENNACO ENERGY INCORPORATED	INNES 7-34-46-75 BG	Campbell	WY	Gamma Ray	CBM
<73>	O-O'	49-005-42886	PENNACO ENERGY INCORPORATED	INNES 15-22-46-75 BG	Campbell	WY	Gamma Ray	CBM
74	O-O'	49-005-24204	CITATION OIL & GAS CORPORATION	GOODINGS 2	Campbell	WY	Resistivity	Oil/Natural Gas
75	O-O'	49-005-24122	CITATION OIL & GAS CORPORATION	CHIMNEY HILL 1	Campbell	WY	Resistivity	Oil/Natural Gas
76	O-O'	49-005-25231	DAVIS OIL COMPANY	SUN CONOCO G 1	Campbell	WY	Resistivity	Oil/Natural Gas
77	O-O'	49-005-45205	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 41-16	Campbell	WY	Gamma Ray	CBM
78	O-O'	49-005-45288	CITATION OIL & GAS CORPORATION	TRIANGLE CBM 34-9	Campbell	WY	Gamma Ray	CBM
79	O-O'	49-005-50857	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 32-9	Campbell	WY	Gamma Ray	CBM
<80>	O-O'	49-005-52224	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 23-4	Campbell	WY	Gamma Ray	CBM
81	O-O'	49-005-52225	CITATION OIL & GAS CORPORATION	TRIANGLE (CBM) UNIT 21-4	Campbell	WY	Gamma Ray	CBM
82	O-O'	49-005-55393	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 23-33	Campbell	WY	Gamma Ray	CBM
83	O-O'	49-005-55392	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 21-33	Campbell	WY	Gamma Ray	CBM
84	O-O'	49-005-55375	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 23-28	Campbell	WY	Gamma Ray	CBM
85	O-O'	49-005-57695	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 41-28	Campbell	WY	Gamma Ray	CBM
86	O-O'	49-005-57708	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 32-20	Campbell	WY	Gamma Ray	CBM
87	O-O'	49-005-57690	CITATION OIL & GAS CORPORATION	TRIANGLE CBM UNIT 41-20	Campbell	WY	Gamma Ray	CBM
88	O-O'	49-005-54353	BILL BARRETT CORPORATION	STATE 14-16-4775BG	Campbell	WY	Gamma Ray	CBM
89	O-O'	49-005-54352	BILL BARRETT CORPORATION	STATE 12-16-4775BG	Campbell	WY	Gamma Ray	CBM
90	O-O'	49-005-55204	BILL BARRETT CORPORATION	LITTLE BUFFALO FED 14-9-4775W	Campbell	WY	Gamma Ray	CBM
91	O-O'	49-005-58438	BILL BARRETT CORPORATION	LITTLE BUFFALO FED 12-9-4775BG	Campbell	WY	Gamma Ray	CBM
92	O-O'	49-005-53685	BILL BARRETT CORPORATION	LITTLE BUFFALO RANCH 14-4-4775BG	Campbell	WY	Gamma Ray	CBM
93	O-O'	49-005-55741	BILL BARRETT CORPORATION	LITTLE BUFFALO FED 12-4-4775BG	Campbell	WY	Gamma Ray	CBM
<94>	O-O'	49-005-27398	FREMONT ENERGY CORPORATION	FEDERAL 5-1	Campbell	WY	Gamma Ray	Oil/Natural Gas
95	O-O'	49-005-25912	LOUISIANA LAND & EXPLORATION CO	BARLOW FEE 41-30	Campbell	WY	Gamma Ray	Oil/Natural Gas
96	O-O'	49-005-58237	WILLIAMS PRODUCTION RMT COMPANY	SRU 43-24-4876	Campbell	WY	Gamma Ray	CBM
97	O-O'	49-005-58217	WILLIAMS PRODUCTION RMT COMPANY	SRU 34-13-4876	Campbell	WY	Gamma Ray	CBM
98	O-O'	49-005-58205	WILLIAMS PRODUCTION RMT COMPANY	SRU 32-13-4876	Campbell	WY	Gamma Ray	CBM
99	O-O'	49-005-58199	WILLIAMS PRODUCTION RMT COMPANY	SRU 34-12-4876	Campbell	WY	Gamma Ray	CBM
100	O-O'	49-005-58223	WILLIAMS PRODUCTION RMT COMPANY	SRU 32-12-4876	Campbell	WY	Gamma Ray	CBM
101	O-O'	49-005-58171	WILLIAMS PRODUCTION RMT COMPANY	SRU 34-1-4876	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
102	O-O'	49-005-58390	WILLIAMS PRODUCTION RMT COMPANY	SRU 21-1-4876	Campbell	WY	Gamma Ray	CBM
103	O-O'	49-005-52414	WILLIAMS PRODUCTION RMT COMPANY	SPU STATE 34-36-4976GW	Campbell	WY	Gamma Ray	CBM
104	O-O'	49-005-52411	WILLIAMS PRODUCTION RMT COMPANY	SPU STATE 21-36-4976GW	Campbell	WY	Gamma Ray	CBM
105	O-O'	49-005-58472	WILLIAMS PRODUCTION RMT COMPANY	SPU 43-26-4976GW	Campbell	WY	Gamma Ray	CBM
106	O-O'	49-005-52404	WILLIAMS PRODUCTION RMT COMPANY	BELUS 32-26-4976 GW	Campbell	WY	Gamma Ray	CBM
107	O-O'	49-005-52401	WILLIAMS PRODUCTION RMT COMPANY	BELUS 21-26-4976GW	Campbell	WY	Gamma Ray	CBM
108	O-O'	49-005-53659	WILLIAMS PRODUCTION RMT COMPANY	BULUS 44-22-4976BG	Campbell	WY	Gamma Ray	CBM
109	O-O'	49-005-57137	PETRO-CANADA RESOURCES USA INC	WILD TURKEY UNIT FED 4976-22-21BG	Campbell	WY	Gamma Ray	CBM
110	O-O'	49-005-57331	WILLIAMS PRODUCTION RMT COMPANY	SPU STATE 43-16-4976BG	Campbell	WY	Gamma Ray	CBM
111	O-O'	49-005-57330	WILLIAMS PRODUCTION RMT COMPANY	SPU STATE 41-16-4976BG	Campbell	WY	Gamma Ray	CBM
<112>	O-O'	49-005-51177	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 32-10-4976BG	Campbell	WY	Gamma Ray	CBM
<113>	O-O'	49-005-51122	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 23-3-4976BG	Campbell	WY	Gamma Ray	CBM
114	O-O'	49-005-51125	WILLIAMS PRODUCTION RMT COMPANY	SPU RECORD 12-3-4976BG	Campbell	WY	Gamma Ray	CBM
115	O-O'	49-005-25125	SUNDANCE OIL EXPLORATION CO	WURLITZER-FEDERAL 1-33	Campbell	WY	Resistivity	Oil/Natural Gas
116	O-O'	49-005-27243	DAVIS OIL COMPANY	JEDI-FEDERAL 1	Campbell	WY	Gamma Ray	Oil/Natural Gas
117	O-O'	49-005-05610	SWEPI LP	MAYCOOK 42-21	Campbell	WY	Resistivity	Oil/Natural Gas
118	O-O'	49-005-05626	SCIMITAR OIL CORPORATION	GOVT-MAYCOCK 1	Campbell	WY	Resistivity	Oil/Natural Gas
119	O-O'	49-005-26163	ABRAXAS PETROLEUM CORPORATION	N. BARBER CREEK 2	Campbell	WY	Resistivity	Oil/Natural Gas
120	O-O'	49-019-06122	BREHM INVESTMENT GROUP INC	GOVT-PARTRIDGE 1	Johnson	WY	Resistivity	Oil/Natural Gas
121	O-O'	49-019-28520	LANCE OIL & GAS COMPANY INC	AUGUSTA 43-5-5076WA	Johnson	WY	Gamma Ray	CBM
122	O-O'	49-019-28554	LANCE OIL & GAS COMPANY INC	AUGUSTA 31-5-5076	Johnson	WY	Gamma Ray	CBM
123	O-O'	49-005-59839	LANCE OIL & GAS COMPANY INC	AUGUSTA STATE 12-33-5176 WA	Campbell	WY	Gamma Ray	Oil/Natural Gas
124	O-O'	49-005-57628	LANCE OIL & GAS COMPANY INC	AUGUSTA 14-28-5176BG	Campbell	WY	Gamma Ray	Oil/Natural Gas
<125>	O-O'	49-019-27587	LANCE OIL & GAS COMPANY INC	AUGUSTA 43-29-5176WA	Johnson	WY	Gamma Ray	CBM
126	O-O'	49-019-27584	LANCE OIL & GAS COMPANY INC	AUGUSTA 32-29-5176WA	Johnson	WY	Gamma Ray	CBM
127	O-O'	49-019-27578	LANCE OIL & GAS COMPANY INC	AUGUSTA 34-20-5176BG	Johnson	WY	Gamma Ray	CBM
128	O-O'	49-019-27577	LANCE OIL & GAS COMPANY INC	AUGUSTA 32-20-5176WA	Johnson	WY	Gamma Ray	CBM
129	O-O'	49-019-20708	EXXON MOBIL CORPORATION	UNIT W-36707 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
130	O-O'	49-019-26750	LANCE OIL & GAS COMPANY INC	AUGUSTA 41-8-5176WA	Johnson	WY	Gamma Ray	CBM
131	O-O'	49-019-21416	YATES PETROLEUM CORP	FORTIFICATION CS ST 10	Johnson	WY	Gamma Ray	CBM
<132>	O-O'	49-019-25014	YATES PETROLEUM CORP	FORTIFICATION CS ST 2	Johnson	WY	Gamma Ray	CBM
133	O-O'	49-019-26419	PENNACO ENERGY INCORPORATED	HOLLCROFT FED 6-14-52-77 AW	Johnson	WY	Gamma Ray	CBM
134	O-O'	49-019-26420	PENNACO ENERGY INCORPORATED	HOLLCROFT FED 4-14-52-77 AW	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
135	O-O'	49-019-22664	PENNACO ENERGY INCORPORATED	HOLLCROFT 8-10-52-77 A	Johnson	WY	Gamma Ray	CBM
136	O-O'	49-019-22662	PENNACO ENERGY INCORPORATED	HOLLCROFT 2-10-52-77 A	Johnson	WY	Gamma Ray	CBM
137	O-O'	49-019-22657	PENNACO ENERGY INCORPORATED	HOLLCROFT 10-3-52-77 A	Johnson	WY	Gamma Ray	CBM
138	O-O'	49-019-22689	PENNACO ENERGY INCORPORATED	HOLLCROFT 2-3-52-77	Johnson	WY	Gamma Ray	CBM
139	O-O'	49-019-21996	PENNACO ENERGY INCORPORATED	HOLLCROFT 11-34-53-77A	Johnson	WY	Gamma Ray	CBM
140	O-O'	49-019-26081	PENNACO ENERGY INCORPORATED	GGM FEDERAL 3-34-53-77	Johnson	WY	Gamma Ray	CBM
141	O-O'	49-019-26072	PENNACO ENERGY INCORPORATED	GGM FED 9-28-53-77	Johnson	WY	Gamma Ray	CBM
142	O-O'	49-019-26071	PENNACO ENERGY INCORPORATED	GGM LLC FED 2-28-53-77	Johnson	WY	Gamma Ray	CBM
143	O-O'	49-033-26265	YATES PETROLEUM CORP	SUKEY STATE 6	Sheridan	WY	Gamma Ray	CBM
144	O-O'	49-033-26263	YATES PETROLEUM CORP	SUKEY CS STATE 2	Sheridan	WY	Gamma Ray	CBM
145	O-O'	49-033-21075	PENNACO ENERGY INCORPORATED	GGM 13-9-53-77A	Sheridan	WY	Gamma Ray	CBM
146	O-O'	49-033-21362	PENNACO ENERGY INCORPORATED	GGM 1-8-53-77A	Sheridan	WY	Gamma Ray	CBM
147	O-O'	49-033-21447	PENNACO ENERGY INCORPORATED	GGM 13-5-53-77A	Sheridan	WY	Gamma Ray	CBM
148	O-O'	49-033-26008	MEDALLION EXPLORATION	TIETJEN FEDERAL 13-32-5477A	Sheridan	WY	Gamma Ray	CBM
149	O-O'	49-033-26012	MEDALLION EXPLORATION	TIETJEN FEDERAL 12-32-5477A	Sheridan	WY	Gamma Ray	CBM
150	O-O'	49-033-26038	MEDALLION EXPLORATION	TIETJEN FEDERAL 41-31-5477	Sheridan	WY	Gamma Ray	CBM
151	O-O'	49-033-24527	MEDALLION EXPLORATION	TIETJEN FEDERAL 34-19-5477	Sheridan	WY	Gamma Ray	CBM
152	O-O'	49-033-24525	MEDALLION EXPLORATION	TIETJEN FEDERAL 21-19-5477	Sheridan	WY	Gamma Ray	CBM
<153>	O-O'	49-033-24522	MEDALLION EXPLORATION	TEITJEN FEDERAL 34-18-5477	Sheridan	WY	Gamma Ray	CBM
154	O-O'	49-033-05207	TRIGOOD OIL COMPANY	PETRICH PATENTED 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
155	O-O'	49-033-20173	HELIS W G ESTATE	FEDERAL W-46462 31-31	Sheridan	WY	Gamma Ray	Oil/Natural Gas
156	O-O'	49-033-27831	PINNACLE GAS RESOURCES INC	LV 15-24-55-78	Sheridan	WY	Gamma Ray	CBM
157	O-O'	49-033-24218	PINNACLE GAS RESOURCES INC	CALOCK STATE 9W-14 55-78	Sheridan	WY	Gamma Ray	CBM
158	O-O'	49-033-27659	PINNACLE GAS RESOURCES INC	LV 01CWP14-55-78	Sheridan	WY	Gamma Ray	CBM
159	O-O'	49-033-27823	PINNACLE GAS RESOURCES INC	LV 15-11-55-79	Sheridan	WY	Gamma Ray	CBM
<160>	O-O'	49-033-27405	ST MARY LAND & EXPLORATION CO	REMINGTON 56-78-24-07P	Sheridan	WY	Gamma Ray	CBM
161	O-O'	49-033-27382	ST MARY LAND & EXPLORATION CO	DOME 56-78-24-03P	Sheridan	WY	Gamma Ray	CBM
162	O-O'	49-033-20170	HERSHEY OIL CORPORATION	BUFFALO CREEK 1-10	Sheridan	WY	Gamma Ray	Oil/Natural Gas
163	O-O'	49-033-20200	ROCK OIL CORPORATION	STYMIE 1	Sheridan	WY	Gamma Ray	Oil/Natural Gas
164	O-O'	49-033-26300	YATES PETROLEUM CORP	MUSCOVITE CS STATE 1	Sheridan	WY	Gamma Ray	CBM
<165>	O-O'	49-033-26299	YATES PETROLEUM CORP	BIOTITE CS STATE 2	Sheridan	WY	Gamma Ray	CBM
166	O-O'	49-033-26141	PINNACLE GAS RESOURCES INC	BCR 05R-15-57-78	Sheridan	WY	Gamma Ray	CBM
167	O-O'	49-033-20058	EOG RESOURCES INC	BELCO KENDRICK 1-5	Sheridan	WY	Resistivity	Oil/Natural Gas
168	O-O'	49-033-26233	ST MARY LAND & EXPLORATION CO	WY STATE 58-79-36-09CK	Sheridan	WY	Gamma Ray	CBM
169	O-O'	49-033-26260	ST MARY LAND & EXPLORATION CO	FEDERAL 58-79-35-01 CK	Sheridan	WY	Gamma Ray	CBM
170	O-O'	49-033-26257	ST MARY LAND & EXPLORATION CO	FEDERAL 58-79-27-09CK	Sheridan	WY	Gamma Ray	CBM
171	O-O'	49-033-26258	ST MARY LAND & EXPLORATION CO	FEDERAL 58-79-27-11CK	Sheridan	WY	Gamma Ray	CBM
172	O-O'	49-033-25362	ST MARY LAND & EXPLORATION CO	REMINGTON 58-79-28-9CK	Sheridan	WY	Gamma Ray	CBM
173	O-O'	49-033-25361	ST MARY LAND & EXPLORATION CO	REMINGTON 58-79-28-3CK	Sheridan	WY	Gamma Ray	CBM
174	O-O'	49-033-25360	ST MARY LAND & EXPLORATION CO	DOME 58-79-20-9CK	Sheridan	WY	Gamma Ray	CBM
175	O-O'	49-033-27171	ST MARY LAND & EXPLORATION CO	REMINGTON 58-79-20-05CK	Sheridan	WY	Gamma Ray	CBM
176	O-O'	29-48B	MT BUREAU OF MINES AND GEOLOGY	HWC-16	Big Horn	MT	Gamma Ray	Coal

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
177	O-O'	29-43B	MT BUREAU OF MINES AND GEOLOGY	HWC-15	Big Horn	MT	Gamma Ray	Coal
178	O-O'	29-50B	MT BUREAU OF MINES AND GEOLOGY	US-80091	Big Horn	MT	Gamma Ray	Coal
179	O-O'	29-24B	MT BUREAU OF MINES AND GEOLOGY	US-7785	Big Horn	MT	Gamma Ray	Coal
180	O-O'	29-16B	MT BUREAU OF MINES AND GEOLOGY	US-7781	Big Horn	MT	Gamma Ray	Coal
<181>	O-O'	29-5B	UNITED STATES GEOLOGICAL SURVEY	AUGER 1	Big Horn	MT	Lith-Log	Coal
182	O-O'	21-13B	MT BUREAU OF MINES AND GEOLOGY S-20	HWC-1	Big Horn	MT	Gamma Ray	Coal
183	O-O'	21-14B	UNITED STATES GEOLOGICAL SURVEY	BIRNEY 8A	Big Horn	MT	Gamma Ray	Coal
1	P-P'	49-009-21686	APACHE CORPORATION	COASTES RANCH 1-19	Converse	WY	Gamma Ray	Oil/Natural Gas
2	P-P'	49-009-22636	APACHE CORPORATION	MONARCH 12-3	Converse	WY	Gamma Ray	Oil/Natural Gas
3	P-P'	49-009-22642	ORYX ENERGY COMPANY	1 SMITH SHEEP 1	Converse	WY	Gamma Ray	Oil/Natural Gas
4	P-P'	49-009-22760	DUNCAN ENERGY COMPANY	BLIZZARD FEDERAL 1-22	Converse	WY	Gamma Ray	Oil/Natural Gas
5	P-P'	49-009-21130	YATES PETROLEUM CORP	FEDERAL-Z 1	Converse	WY	Gamma Ray	Oil/Natural Gas
6	P-P'	49-009-21985	DNR OIL & GAS INC	NORTEX HART W-66023 1-25X	Converse	WY	Gamma Ray	Oil/Natural Gas
7	P-P'	49-009-21146	ANR PRODUCTION COMPANY	S SPEARHEAD W-5753 1-13	Converse	WY	Gamma Ray	Oil/Natural Gas
8	P-P'	49-009-21306	NORTH FINN LLC	JUDSON FEE 1-11	Converse	WY	Gamma Ray	Oil/Natural Gas
9	P-P'	49-009-21253	ANR PRODUCTION COMPANY	SOSPEARHEAD W-48405 1-2	Converse	WY	Gamma Ray	Oil/Natural Gas
10	P-P'	49-009-20482	CHAPARRAL RESOURCES INC	STREVENS STATE 1	Converse	WY	Gamma Ray	Oil/Natural Gas
11	P-P'	49-009-20660	PIONEER NATURAL RESOURCES USA INC	ROSS FEDERAL 1-18	Converse	WY	Gamma Ray	Oil/Natural Gas
12	P-P'	49-009-20629	WEXPRO COMPANY	HAMILL W-34726 1-7	Converse	WY	Gamma Ray	Oil/Natural Gas
13	P-P'	49-009-20820	WEXPRO COMPANY	FOX 1-18	Converse	WY	Gamma Ray	Oil/Natural Gas
14	P-P'	49-009-20733	WEXPRO COMPANY	FED 1-5	Converse	WY	Gamma Ray	Oil/Natural Gas
15	P-P'	49-009-20559	SOUTHLAND ROYALTY COMPANY	FED W-9389 1	Converse	WY	Gamma Ray	Oil/Natural Gas
16	P-P'	49-009-20512	WEXPRO COMPANY	FED 4	Converse	WY	Gamma Ray	Oil/Natural Gas
17	P-P'	49-009-20366	WEXPRO COMPANY	SPEARHEAD RANCH 1	Converse	WY	Gamma Ray	Oil/Natural Gas
<18>	P-P'	49-009-20544	WEXPRO COMPANY	SPEARHEAD RANCH 5	Converse	WY	Gamma Ray	Oil/Natural Gas
19	P-P'	49-009-22658	EXXON MOBIL CORPORATION	BULL GULCH UNIT FEE 1	Converse	WY	Gamma Ray	Oil/Natural Gas
20	P-P'	49-009-22172	OXY USA INC	FEDERAL BZ W-28233	Converse	WY	Gamma Ray	Oil/Natural Gas
21	P-P'	49-009-06481	EL PASO EXPLORATION	GOVT 1	Converse	WY	Resistivity	Oil/Natural Gas
22	P-P'	49-009-21740	DEVON ENERGY PRODUCTION CO. LP	UNIT W-0314538 1	Converse	WY	Gamma Ray	Oil/Natural Gas
23	P-P'	49-005-56238	BILL BARRETT CORPORATION	FEDERAL 12-27-4175	Campbell	WY	Gamma Ray	CBM
24	P-P'	49-005-56229	BILL BARRETT CORPORATION	FEDERAL 14-22-4175	Campbell	WY	Gamma Ray	CBM
25	P-P'	49-005-56227	BILL BARRETT CORPORATION	FEDERAL 43-21-4175	Campbell	WY	Gamma Ray	CBM
26	P-P'	49-005-56224	BILL BARRETT CORPORATION	FEDERAL 32-21-4175	Campbell	WY	Gamma Ray	CBM
27	P-P'	49-005-45335	BILL BARRETT CORPORATION	WI MOORE 14-16-4175	Campbell	WY	Gamma Ray	CBM
28	P-P'	49-005-56217	BILL BARRETT CORPORATION	FEDERAL 43-17-4175	Campbell	WY	Gamma Ray	CBM
29	P-P'	49-005-56214	BILL BARRETT CORPORATION	FEDERAL 32-17-4175	Campbell	WY	Gamma Ray	CBM
30	P-P'	49-005-56212	BILL BARRETT CORPORATION	FEDERAL 21-17-4175	Campbell	WY	Gamma Ray	CBM
31	P-P'	49-005-56209	BILL BARRETT CORPORATION	FEDERAL 14-8-4175	Campbell	WY	Gamma Ray	CBM
32	P-P'	49-005-54945	BILL BARRETT CORPORATION	IBERLIN 42-7-4175	Campbell	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
33	P-P'	49-005-55811	BILL BARRETT CORPORATION	IBERLIN 34-6-4175	Campbell	WY	Gamma Ray	CBM
34	P-P'	49-005-55812	BILL BARRETT CORPORATION	IBERLIN 34-6-4175	Campbell	WY	Gamma Ray	CBM
35	P-P'	49-005-56203	BILL BARRETT CORPORATION	FEDERAL 12-6-4175	Campbell	WY	Gamma Ray	CBM
36	P-P'	49-005-34759	DEVON ENERGY PRODUCTION CO. LP	WPTU 36S-16	Campbell	WY	Gamma Ray	CBM
37	P-P'	49-005-34257	DEVON ENERGY PRODUCTION CO. LP	WPTU 36S-6	Campbell	WY	Gamma Ray	CBM
38	P-P'	49-005-34416	DEVON ENERGY PRODUCTION CO. LP	WPTU 36S-10	Campbell	WY	Gamma Ray	CBM
39	P-P'	49-005-25483	WOODS PETROLEUM CORPORATION	PINE TREE UNIT 35-10	Campbell	WY	Gamma Ray	Oil/Natural Gas
40	P-P'	49-005-56947	DEVON ENERGY PRODUCTION CO. LP	WPTU 21S-9	Campbell	WY	Gamma Ray	CBM
41	P-P'	49-005-56944	DEVON ENERGY PRODUCTION CO. LP	WPTU 21S-15	Campbell	WY	Gamma Ray	CBM
42	P-P'	49-005-56946	DEVON ENERGY PRODUCTION CO. LP	WPTU 21S-11	Campbell	WY	Gamma Ray	CBM
43	P-P'	49-005-56945	DEVON ENERGY PRODUCTION CO. LP	WPTU 21S-13	Campbell	WY	Gamma Ray	CBM
44	P-P'	49-005-56954	DEVON ENERGY PRODUCTION CO. LP	WPTU 20S-9	Campbell	WY	Gamma Ray	CBM
45	P-P'	49-005-56953	DEVON ENERGY PRODUCTION CO. LP	WPTU 20S-7	Campbell	WY	Gamma Ray	CBM
46	P-P'	49-019-26995	DEVON ENERGY PRODUCTION CO. LP	WPTU 20S-3	Johnson	WY	Gamma Ray	CBM
47	P-P'	49-019-26992	DEVON ENERGY PRODUCTION CO. LP	WPTU 17S-13	Johnson	WY	Gamma Ray	CBM
48	P-P'	49-019-26996	DEVON ENERGY PRODUCTION CO. LP	WPTU 18S-9	Johnson	WY	Gamma Ray	CBM
49	P-P'	49-019-24147	DEVON ENERGY PRODUCTION CO. LP	WPTU 18S-7	Johnson	WY	Gamma Ray	CBM
50	P-P'	49-019-24146	DEVON ENERGY PRODUCTION CO. LP	WPTU 18S-3	Johnson	WY	Gamma Ray	CBM
51	P-P'	49-019-24151	DEVON ENERGY PRODUCTION CO. LP	WPTU 7S-13	Johnson	WY	Gamma Ray	CBM
52	P-P'	49-019-27003	DEVON ENERGY PRODUCTION CO. LP	WPTU 7S-5	Johnson	WY	Gamma Ray	CBM
53	P-P'	49-019-26872	BLACK DIAMOND ENERGY INC	MOORE FEDERAL 41-12-4277	Johnson	WY	Gamma Ray	CBM
54	P-P'	49-019-26868	BLACK DIAMOND ENERGY INC	MOORE FEDERAL 43-1-4277	Johnson	WY	Gamma Ray	CBM
55	P-P'	49-019-26867	BLACK DIAMOND ENERGY INC	MOORE FEDERAL 41-1-4277	Johnson	WY	Gamma Ray	CBM
56	P-P'	49-019-24512	BLACK DIAMOND ENERGY INC	JOHNSON STATE 34-36-4377	Johnson	WY	Gamma Ray	CBM
57	P-P'	49-019-24511	BLACK DIAMOND ENERGY INC	JOHNSON STATE 23-36-4377	Johnson	WY	Gamma Ray	CBM
58	P-P'	49-019-24509	BLACK DIAMOND ENERGY INC	JOHNSON STATE 12-36-4377	Johnson	WY	Gamma Ray	CBM
59	P-P'	49-019-23327	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK FEDERAL 14-25-4377	Johnson	WY	Gamma Ray	CBM
60	P-P'	49-019-23328	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK FEDERAL 12-25-4377	Johnson	WY	Gamma Ray	CBM
61	P-P'	49-019-23336	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK 34-23-4377	Johnson	WY	Gamma Ray	CBM
62	P-P'	49-019-26306	WILLIAMS PRODUCTION RMT COMPANY	BCU 23-23-4377	Johnson	WY	Gamma Ray	CBM
63	P-P'	49-019-26303	WILLIAMS PRODUCTION RMT COMPANY	BCU 12-23-4377	Johnson	WY	Gamma Ray	CBM
64	P-P'	49-019-26273	WILLIAMS PRODUCTION RMT COMPANY	BCU 14-14-4377	Johnson	WY	Gamma Ray	CBM
65	P-P'	49-019-26272	WILLIAMS PRODUCTION RMT COMPANY	BCU 12-14-4377	Johnson	WY	Gamma Ray	CBM
66	P-P'	49-019-28525	YATES PETROLEUM CORP	BLADE CS FEDERAL 14	Johnson	WY	Gamma Ray	Oil/Natural Gas
67	P-P'	49-019-28536	YATES PETROLEUM CORP	BLADE CS FEDERAL 8	Johnson	WY	Gamma Ray	Oil/Natural Gas
<68>	P-P'	49-019-23405	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK 41-10-4377	Johnson	WY	Gamma Ray	CBM
69	P-P'	49-019-23347	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK FEDERAL 34-3-4377	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
70	P-P'	49-019-27501	WILLIAMS PRODUCTION RMT COMPANY	DRY FORK FEDERAL 4-3-4377	Johnson	WY	Gamma Ray	CBM
71	P-P'	49-019-27442	WINDSOR ENERGY GROUP LLC	JOHNSON FEDERAL KC 43-34-44-77	Johnson	WY	Gamma Ray	CBM
72	P-P'	49-019-25883	WINDSOR ENERGY GROUP LLC	JOHNSON-KC 34-27-44-77	Johnson	WY	Gamma Ray	CBM
73	P-P'	49-019-27392	WINDSOR ENERGY GROUP LLC	JOHNSON 33-27-44-77BG-KC	Johnson	WY	Gamma Ray	CBM
74	P-P'	49-019-27391	WINDSOR ENERGY GROUP LLC	JOHNSON 22-27-44-77BG-KC	Johnson	WY	Gamma Ray	CBM
75	P-P'	49-019-25880	WINDSOR ENERGY GROUP LLC	JOHNSON-KC 21-27-44-77	Johnson	WY	Gamma Ray	CBM
76	P-P'	49-019-21821	KLT GAS INC	JEPSEN 14-22	Johnson	WY	Gamma Ray	CBM
77	P-P'	49-019-25872	WINDSOR ENERGY GROUP LLC	STREETER-KC 12-22-44-77	Johnson	WY	Gamma Ray	CBM
78	P-P'	49-019-27461	WINDSOR ENERGY GROUP LLC	FEDERAL KC 41-21-44-77	Johnson	WY	Gamma Ray	CBM
<79>	P-P'	49-019-25908	WINDSOR ENERGY GROUP LLC	STATE-KC 34-16-44-77	Johnson	WY	Gamma Ray	CBM
80	P-P'	49-019-21827	KLT GAS OPERATION INC	STATE MW 23-16-44-77	Johnson	WY	Gamma Ray	CBM
81	P-P'	49-019-25904	WINDSOR ENERGY GROUP LLC	STATE-KC 12-16-44-77	Johnson	WY	Gamma Ray	CBM
82	P-P'	49-019-21818	WINDSOR ENERGY GROUP LLC	STREETER MW 41-17-44-77	Johnson	WY	Gamma Ray	CBM
83	P-P'	49-019-27910	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 23-08-44-77	Johnson	WY	Gamma Ray	CBM
84	P-P'	49-019-27911	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 12-08-44-77	Johnson	WY	Gamma Ray	CBM
85	P-P'	49-019-27913	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 41-07-44-77	Johnson	WY	Gamma Ray	CBM
86	P-P'	49-019-27920	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 34-06-44-77	Johnson	WY	Gamma Ray	CBM
87	P-P'	49-019-27922	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 23-06-44-77	Johnson	WY	Gamma Ray	CBM
88	P-P'	49-019-27925	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 12-06-44-77	Johnson	WY	Gamma Ray	CBM
89	P-P'	49-019-27905	WINDSOR ENERGY GROUP LLC	STREETER FEDERAL BG 41-01-44-76	Johnson	WY	Gamma Ray	CBM
90	P-P'	49-019-20332	WEBB RESOURCES INC	STATE-WEBB 36-D	Johnson	WY	Resistivity	Oil/Natural Gas
91	P-P'	49-019-21087	YATES PETROLEUM CORP	JEPSON DRAW CS 1	Johnson	WY	Gamma Ray	CBM
92	P-P'	49-019-26397	WINDSOR ENERGY GROUP LLC	STREETER BG 12-26-45-78	Johnson	WY	Gamma Ray	CBM
93	P-P'	49-019-26709	YATES PETROLEUM CORP	JOE CS 1	Johnson	WY	Gamma Ray	CBM
94	P-P'	49-019-20703	BP EXPLORATION INC	FORT RENO UNIT 15-D	Johnson	WY	Gamma Ray	Oil/Natural Gas
95	P-P'	49-019-20663	BP EXPLORATION INC	NIPPLE II 10-D	Johnson	WY	Gamma Ray	Oil/Natural Gas
96	P-P'	49-019-20756	WELLSTAR CORPORATION	FORT RENO W-0314490 10-2	Johnson	WY	Gamma Ray	Oil/Natural Gas
97	P-P'	49-019-20233	WEBB RESOURCES INC	FED-NIPPLE UNIT 4-1	Johnson	WY	Resistivity	Oil/Natural Gas
98	P-P'	49-019-20733	GARY SAMUEL JR. & ASSOC	NIMIC 33-A	Johnson	WY	Gamma Ray	Oil/Natural Gas
99	P-P'	49-019-20232	WEBB RESOURCES INC	FEDERAL 28-D	Johnson	WY	Gamma Ray	Oil/Natural Gas
100	P-P'	49-019-20727	DAVIS OIL COMPANY	HESSE FRED 1	Johnson	WY	Gamma Ray	Oil/Natural Gas
<101>	P-P'	49-019-26897	HUBER JM CORP	BRUBAKER STATE 13BG-16 46-78	Johnson	WY	Gamma Ray	CBM
102	P-P'	49-019-20506	DAVIS OIL COMPANY	CD FEDERAL 1	Johnson	WY	Resistivity	Oil/Natural Gas
103	P-P'	49-019-28359	PETRO-CANADA RESOURCES USA INC	ST 4779-36-11CO	Johnson	WY	Gamma Ray	CBM
104	P-P'	49-019-20189	DAVIS OIL COMPANY	CURTIS DRAW II UNIT 1	Johnson	WY	Resistivity	Oil/Natural Gas
105	P-P'	49-019-20075	WOODS PETROLEUM CORPORATION	SAMUEL-FEDERAL 23-1	Johnson	WY	Gamma Ray	Oil/Natural Gas
106	P-P'	49-019-20101	DAVIS OIL COMPANY	CURTIS DRAW UNIT 1	Johnson	WY	Resistivity	Oil/Natural Gas

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
107	P-P'	49-019-24612	LANCE OIL & GAS COMPANY INC	IBERLIN FEDERAL 2302-4779	Johnson	WY	Gamma Ray	CBM
108	P-P'	49-019-24600	LANCE OIL & GAS COMPANY INC	IBERLIN FEDERAL 4103-4779	Johnson	WY	Gamma Ray	CBM
109	P-P'	49-019-20401	WOODS PETROLEUM CORPORATION	RED UNIT 2	Johnson	WY	Gamma Ray	Oil/Natural Gas
110	P-P'	49-019-26801	LANCE OIL & GAS COMPANY INC	CAMINO RANCH LP FED 34-27-4879BG	Johnson	WY	Gamma Ray	CBM
111	P-P'	49-019-26705	LANCE OIL & GAS COMPANY INC	CAMINO RANCH LP FED 23-27-4879	Johnson	WY	Gamma Ray	CBM
112	P-P'	49-019-26707	LANCE OIL & GAS COMPANY INC	CAMINO RANCH LP FED 12-27-4879	Johnson	WY	Gamma Ray	CBM
113	P-P'	49-019-24550	LANCE OIL & GAS COMPANY INC	CAMINO FEDERAL 1422-4879	Johnson	WY	Gamma Ray	CBM
114	P-P'	49-019-24565	LANCE OIL & GAS COMPANY INC	CAMINO FEDERAL 4321-4879	Johnson	WY	Gamma Ray	CBM
115	P-P'	49-019-26656	LANCE OIL & GAS COMPANY INC	IBERLIN 34-17-4879BG	Johnson	WY	Gamma Ray	CBM
<116>	P-P'	49-019-26653	LANCE OIL & GAS COMPANY INC	IBERLIN 23-17-4879BG	Johnson	WY	Gamma Ray	CBM
117	P-P'	49-019-26652	LANCE OIL & GAS COMPANY INC	IBERLIN 21-17-4879BG	Johnson	WY	Gamma Ray	CBM
118	P-P'	49-019-24158	LANCE OIL & GAS COMPANY INC	BIG CAT FEE 2308-4879	Johnson	WY	Gamma Ray	CBM
119	P-P'	49-019-24157	LANCE OIL & GAS COMPANY INC	BIG CAT FEE 2108-4879	Johnson	WY	Gamma Ray	CBM
120	P-P'	49-019-26739	PAUPERS DREAM COMPANY	ESPONDA 4980-15-5	Johnson	WY	Gamma Ray	CBM
<121>	P-P'	49-019-26740	PAUPERS DREAM COMPANY	STATE 4980-16-1	Johnson	WY	Gamma Ray	CBM
122	P-P'	49-019-26736	PAUPERS DREAM COMPANY	HODGES 4980-9-15	Johnson	WY	Gamma Ray	CBM
123	P-P'	49-019-20185	WOODS PETROLEUM CORPORATION	MARON-FEDERAL 20-1	Johnson	WY	Gamma Ray	Oil/Natural Gas
<124>	P-P'	49-019-23782	FIDELITY EXPLORATION & PRODUCTION COMPANY	BOLINGER RANCH 14E-301	Johnson	WY	Gamma Ray	CBM
125	P-P'	49-019-20603	ANSCHULTZ CORPORATION	STATE 2945 10-20	Johnson	WY	Resistivity	Oil/Natural Gas
126	P-P'	49-019-20469	PHILLIPS PETROLEUM COMPANY	MARON-A 1	Johnson	WY	Resistivity	Oil/Natural Gas
127	P-P'	49-019-22050	FIDELITY EXPLORATION & PRODUCTION CO	TEXACO-BELUS 12U-711	Johnson	WY	Gamma Ray	CBM
128	P-P'	49-019-21280	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 43U-212	Johnson	WY	Gamma Ray	CBM
129	P-P'	49-019-21277	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 32U-212	Johnson	WY	Gamma Ray	CBM
130	P-P'	49-019-21273	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 22UF-212	Johnson	WY	Gamma Ray	CBM
131	P-P'	49-019-21264	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 12UF-212	Johnson	WY	Gamma Ray	CBM
<132>	P-P'	49-019-21312	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 41UF-312	Johnson	WY	Gamma Ray	CBM
133	P-P'	49-019-21683	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 34BC-3422	Johnson	WY	Gamma Ray	CBM
134	P-P'	49-019-21570	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 23BC-3422	Johnson	WY	Gamma Ray	CBM
135	P-P'	49-019-21187	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 12UF-3422	Johnson	WY	Gamma Ray	CBM
136	P-P'	49-019-21188	FIDELITY EXPLORATION & PRODUCTION CO	LDEC 41UF-3322	Johnson	WY	Gamma Ray	Oil/Natural Gas
137	P-P'	49-019-22469	NERD GAS COMPANY LLC	JELINEK 14-15A	Johnson	WY	Gamma Ray	CBM
138	P-P'	49-019-22465	FIDELITY EXPLORATION & PRODUCTION CO	TEXACO 12K2-922	Johnson	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
139	P-P'	49-019-22581	FIDELITY EXPLORATION & PRODUCTION CO	WUTHIER 14U-3332	Johnson	WY	Gamma Ray	CBM
140	P-P'	49-019-21169	CHEVRON USA INC	TEXACO 33U-3232	Johnson	WY	Gamma Ray	Oil/Natural Gas
141	P-P'	49-019-21428	FIDELITY EXPLORATION & PRODUCTION CO	TEXACO 24BC-2932	Johnson	WY	Gamma Ray	CBM
142	P-P'	49-033-25054	SRW INC	STATE BERGSTROM C4-12	Sheridan	WY	Gamma Ray	CBM
<143>	P-P'	49-033-25031	MEDALLION EXPLORATION	STATE HBELUS A4-1	Sheridan	WY	Gamma Ray	CBM
144	P-P'	49-033-24108	SRW INC	LEATH B3A-36	Sheridan	WY	Gamma Ray	CBM
145	P-P'	49-033-25498	SRW INC	LEATH B3-25	Sheridan	WY	Gamma Ray	CBM
146	P-P'	49-033-25074	SRW INC	LEATH A4-25	Sheridan	WY	Gamma Ray	CBM
147	P-P'	49-033-24856	SRW INC	TIFT A4-24	Sheridan	WY	Gamma Ray	CBM
148	P-P'	49-033-21096	CONTINENTAL PRODUCTION CO LLC	BUF 9-11B	Sheridan	WY	Gamma Ray	CBM
149	P-P'	49-033-21135	CONTINENTAL PRODUCTION CO LLC	BUF 7-11B	Sheridan	WY	Gamma Ray	CBM
150	P-P'	49-033-21097	CONTINENTAL PRODUCTION CO LLC	BUF 3-11B	Sheridan	WY	Gamma Ray	CBM
151	P-P'	49-033-21060	CONTINENTAL PRODUCTION CO LLC	BUF 14-2B	Sheridan	WY	Gamma Ray	CBM
152	P-P'	49-033-21061	CONTINENTAL PRODUCTION CO LLC	BUF 6-2B	Sheridan	WY	Gamma Ray	CBM
153	P-P'	49-033-21062	CONTINENTAL PRODUCTION CO LLC	BUF 3-2B	Sheridan	WY	Gamma Ray	CBM
154	P-P'	49-033-21065	CONTINENTAL PRODUCTION CO LLC	BUF 1-2A	Sheridan	WY	Gamma Ray	CBM
155	P-P'	49-033-21098	CONTINENTAL PRODUCTION CO LLC	BUF 15-35B	Sheridan	WY	Gamma Ray	CBM
156	P-P'	49-033-23002	CONTINENTAL PRODUCTION CO LLC	KOBIELUZS STATE 1-34	Sheridan	WY	Gamma Ray	CBM
157	P-P'	49-033-24926	PENNACO ENERGY INC	KOLTISKA 9-27-55-83 KZ/CR	Sheridan	WY	Gamma Ray	CBM
158	P-P'	49-033-24142	PENNACO ENERGY INC	WILLEY 9-22-55-83 CR	Sheridan	WY	Gamma Ray	CBM
159	P-P'	49-033-25757	PENNACO ENERGY INC	MUSSELL 1-22-55-83 CR	Sheridan	WY	Gamma Ray	CBM
160	P-P'	49-033-27740	PENNACO ENERGY INC	VISTA ALTA 15-15-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
161	P-P'	49-033-27822	PENNACO ENERGY INC	VISTA ALTA 3-15-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
162	P-P'	49-033-27502	PENNACO ENERGY INC	PUCKETT 5-10-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
163	P-P'	49-033-27455	PENNACO ENERGY INC	PUCKETT 1-9-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
164	P-P'	49-033-27510	PENNACO ENERGY INC	STATE 15-4-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
165	P-P'	49-033-27252	PENNACO ENERGY INC	STATE 5-4-55-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
166	P-P'	49-033-25192	PENNACO ENERGY INC	STATE 11-33-56-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
167	P-P'	49-033-21925	PENNACO ENERGY INC	KOLTISKA 13-28-56-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
168	P-P'	49-033-21928	PENNACO ENERGY INC	KOLTISKA 5-28-56-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
169	P-P'	49-033-25108	PENNACO ENERGY INC	AC RANCH 9-20-56-83 MZ/C	Sheridan	WY	Gamma Ray	CBM
170	P-P'	49-033-24350	HUBER JM CORP	GREENOUGH 1MK-20 56-83	Sheridan	WY	Gamma Ray	CBM
171	P-P'	49-033-25679	PENNACO ENERGY INC	STATE 7-17-56-83 MZ/CR	Sheridan	WY	Gamma Ray	CBM
172	P-P'	49-033-25455	HUBER JM CORP	HUTTON MB 15MK-8 56-83	Sheridan	WY	Gamma Ray	CBM
173	P-P'	49-033-23048	HUBER JM CORP	AC RANCH 7MK-8 56-83	Sheridan	WY	Gamma Ray	CBM
174	P-P'	49-033-25282	HUBER JM CORP	AC RANCH STATE 11MK-5 56-83	Sheridan	WY	Gamma Ray	CBM
175	P-P'	49-033-23056	HUBER JM CORP	AC RANCH 3MK-5 56-83	Sheridan	WY	Gamma Ray	CBM
176	P-P'	49-033-22488	FIDELITY EXPLORATION & PRODUCTION CO	KOLTISKA 43C-3273	Sheridan	WY	Gamma Ray	CBM
177	P-P'	49-033-22496	FIDELITY EXPLORATION & PRODUCTION CO	KOLTISKA 41C-3273	Sheridan	WY	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
178	P-P'	49-033-22756	HUBER JM CORP	SMITH 9MK-29 57-83	Sheridan	WY	Gamma Ray	CBM
179	P-P'	49-033-22754	HUBER JM CORP	SMITH 1MK-29 57-83	Sheridan	WY	Gamma Ray	CBM
180	P-P'	49-033-20611	HUBER JM CORP	TAYLOR 10K-20-57-83	Sheridan	WY	Gamma Ray	CBM
181	P-P'	49-033-20615	HUBER JM CORP	TAYLOR 2K-20 57-83	Sheridan	WY	Gamma Ray	CBM
182	P-P'	49-033-22312	HUBER JM CORP	LPD 15M-17 57-83	Sheridan	WY	Gamma Ray	CBM
183	P-P'	49-033-22205	HUBER JM CORP	LPD 7M-17 57-83	Sheridan	WY	Gamma Ray	CBM
184	P-P'	49-033-20391	HUBER JM CORP	LPD 2K-17 57-83	Sheridan	WY	Gamma Ray	CBM
185	P-P'	49-033-20402	HUBER JM CORP	LPD 10M-8-57-83	Sheridan	WY	Gamma Ray	CBM
186	P-P'	49-033-20469	HUBER JM CORP	LPD 2K-8 57-83	Sheridan	WY	Gamma Ray	CBM
187	P-P'	49-033-20409	HUBER JM CORP	DEWEY 15K-5 57-83	Sheridan	WY	Gamma Ray	CBM
188	P-P'	49-033-20359	HUBER JM CORP	DEWEY J10KLK-5 57-83	Sheridan	WY	Gamma Ray	CBM
189	P-P'	49-033-20592	HUBER JM CORP	DEWEY J7M-5 57-83	Sheridan	WY	Gamma Ray	CBM
190	P-P'	49-033-22514	HUBER JM CORP	DUNNING 3M-5 57-83	Sheridan	WY	Gamma Ray	CBM
<191>	P-P'	49-033-22813	HUBER JM CORP	DUNNING-STATE 13K-32 58-83	Sheridan	WY	Gamma Ray	CBM
192	P-P'	49-033-22513	HUBER JM CORP	DUNNING 9-31 58-83	Sheridan	WY	Gamma Ray	CBM
193	P-P'	49-033-23224	HUBER JM CORP	ANKNEY 7MK-31 58-83	Sheridan	WY	Gamma Ray	CBM
194	P-P'	49-033-21316	HUBER JM CORP	CHEVRON 3MK-31 58-83	Sheridan	WY	Gamma Ray	CBM
195	P-P'	49-033-24328	FIDELITY EXPLORATION & PRODUCTION CO	DELAPP FEDERAL 14C-3083	Sheridan	WY	Gamma Ray	CBM
196	P-P'	49-033-20963	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 43C-2584	Sheridan	WY	Gamma Ray	CBM
197	P-P'	49-033-20972	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 32C-2584	Sheridan	WY	Gamma Ray	CBM
198	P-P'	49-033-20980	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 21C-2584	Sheridan	WY	Gamma Ray	CBM
199	P-P'	49-033-21217	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 14C-2484	Sheridan	WY	Gamma Ray	CBM
200	P-P'	49-033-21082	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 43D-2/3-2384	Sheridan	WY	Gamma Ray	CBM
201	P-P'	49-033-21205	FIDELITY EXPLORATION & PRODUCTION CO	RESERVE 32C-2384	Sheridan	WY	Gamma Ray	CBM
202	P-P'	25-003-21500	FIDELITY EXPLORATION & PRODUCTION CO	SHELL 24C-3399	Big Horn	MT	Gamma Ray	CBM
203	P-P'	25-003-21505	FIDELITY EXPLORATION & PRODUCTION CO	SHELL 33C-3399	Big Horn	MT	Gamma Ray	CBM
204	P-P'	25-003-21502	FIDELITY EXPLORATION & PRODUCTION CO	SHELL 31C-3399	Big Horn	MT	Gamma Ray	CBM
205	P-P'	25-003-21202	POWERS ENERGY INC	JENSEN 1	Big Horn	MT	Gamma Ray	Oil/Natural Gas
206	P-P'	25-22B	FALCON & SEABOARD	H-G 1	Big Horn	MT	Resistivity	Coal
207	P-P'	25-003-21412	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 22D-2299	Big Horn	MT	Gamma Ray	CBM
208	P-P'	25-003-21879	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL FEDERAL 32C-1599	Big Horn	MT	Gamma Ray	CBM
209	P-P'	25-003-22511	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 43W-1099	Big Horn	MT	Gamma Ray	CBM
210	P-P'	25-003-21914	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL ET AL 32C-1099	Big Horn	MT	Gamma Ray	CBM

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Well Number	Cross Section	API/Well ID	Operator	Well Name	County	State	Log_type	Well_type
211	P-P'	25-003-21581	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 33EW-3389	Big Horn	MT	Gamma Ray	CBM
212	P-P'	25-11B	WINONA COOKE	1	Big Horn	MT	Resistivity	Coal
<213>	P-P'	25-003-21989	FIDELITY EXPLORATION & PRODUCTION CO	CONSOL 32W-2889	Big Horn	MT	Gamma Ray	CBM
<214>	P-P'	25-2B	MT BUREAU OF MINES AND GEOLOGY	US-7733	Big Horn	MT	Gamma Ray	Coal
215	P-P'	17-15B	MT BUREAU OF MINES AND GEOLOGY	SH-7016	Big Horn	MT	Gamma Ray	Coal
216	P-P'	17-22B	MT BUREAU OF MINES AND GEOLOGY	US-7917	Big Horn	MT	Gamma Ray	Coal
217	P-P'	25-003-21643	FIDELITY EXPLORATION & PRODUCTION CO	M. YOUNG 32KG-3379	Big Horn	MT	Gamma Ray	CBM
218	P-P'	17-6B	MT BUREAU OF MINES AND GEOLOGY	SH-736	Big Horn	MT	Spontaneous Potential	Coal
219	P-P'	25-003-21587	PETROLEUM DEV CORP	FEE KD 0739-9	Big Horn	MT	Gamma Ray	Oil/Natural Gas
220	P-P'	17-30B	MT BUREAU OF MINES AND GEOLOGY	US-7930	Big Horn	MT	Gamma Ray	Coal
221	P-P'	17-2B	UNITED STATES GEOLOGICAL SURVEY	US-7752	Big Horn	MT	Gamma Ray	Coal
222	P-P'	9-25B	UNITED STATES GEOLOGICAL SURVEY	US-7751	Big Horn	MT	Gamma Ray	Coal
223	P-P'	9-35B	MT BUREAU OF MINES AND GEOLOGY	US-7926	Big Horn	MT	Gamma Ray	Coal
224	P-P'	9-34B	MT BUREAU OF MINES AND GEOLOGY	US-7927	Big Horn	MT	Gamma Ray	Coal
225	P-P'	9-16B	UNITED STATES GEOLOGICAL SURVEY	US-7740	Big Horn	MT	Gamma Ray	Coal
226	P-P'	9-30B	MT BUREAU OF MINES AND GEOLOGY	US-7953	Big Horn	MT	Gamma Ray	Coal
227	P-P'	9-29B	MT BUREAU OF MINES AND GEOLOGY	US-7921	Big Horn	MT	Gamma Ray	Coal
228	P-P'	9-28B	MT BUREAU OF MINES AND GEOLOGY	US-7922	Big Horn	MT	Gamma Ray	Coal

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