STRUCTURE AND STRATIGRAPHY

OF THE

B ZONE (LANSING-KANSAS CITY GROUPS)

IN

RED WILLOW COUNTY, NEBRASKA

by

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A THESIS

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
ILLUSTRATIONS	iv
ABSTRACT	
INTRODUCTION	1
Purpose and Scope of Investigation	1
Study Area	1
Previous Work	4
METHOD OF INVESTIGATION	5
Sources of Data	5
Procedures	6
STRATIGRAPHY	7
Framework	7
B Zone	12
Conclusions	19
STRUCTURE	19
Regional Framework	19
B Zone	22
Genesis of Structures	24
OCCURRENCE OF OIL	26
Relationship of Structure, Stratigraphy, and Oil	26
Recommendations	28
SUMMARY	29
REFERENCES CITED	30
APPENDICES A AND B	

ILLUSTRATIONS

Plate I	Location of Oil Fields, Cross Sections, and Cored Wells Penetrating the B Zone, Red Willow County, Nebraska.....	In pocket
II	North-South Electric-Log Cross Section of the Interval Between the Tops of the Admire Group and the Precambrian, Red Willow County, Nebraska....	In pocket
III	West-East Electric-Log Cross Section of the Interval Between the Tops of the Admire Group and the Precambrian, Red Willow County, Nebraska.....	In pocket
IV	Thickness of the Interval Between the Tops of the Stone Corral Formation and the B Zone in Part of Red Willow County, Nebraska.....	In pocket
V	Thickness of the B Zone, Red Willow County, Nebraska.....	In pocket
VI	Regional Structure of the B Zone, Red Willow County, Nebraska.....	In pocket
VII	Detailed Structure of the B Zone, Part of Red Willow County, Nebraska.....	In pocket
VIII	Total Thickness of Producing Intervals in the B Zone, Southeastern Red Willow County, Nebraska..	In pocket
IX	Initial (24-hour) B Zone Production from Selected Wells, Southeastern Red Willow County, Nebraska	In pocket
Figure 1	Map showing location of study area and major oil fields producing from the B Zone.....	Page 2
2	Electric log and columnar section of a typical well in the study area.	8

Page

Figure 3. West-east regional cross section in southern Nebraska showing stratigraphic and structural relations at the beginning of Kansas City deposition 9

4. Various usages of the term "B Zone" 13

5. Evidence offered by Larson (1962) to show detrital build-ups of the B and C zones and the Oread Formation over localized (paleo?) structures..... 18

6. Principal structural features of Nebraska..... 20

7. Summary of the structural development of the Cambridge Arch and the immediate vicinity in Kansas 23

Table 1. Cumulative Production of Oil Fields in Red Willow County, Nebraska..... 3

ABSTRACT

The B zone is an important oil producing pay zone in the Lansing-Kansas City Groups (Pennsylvanian System) in Red Willow County, Nebraska. As defined here, from electric logs, rocks composing the B zone are tentatively equated by R. R. Burchett in the Stoner Limestone, Eudora Shale, and Captain Creek Members of the Stanton Formation in outcrops of eastern Nebraska. Both structural and stratigraphic control of B zone production is evident from this study.

B zone production is associated with north-northwest trending low-relief anticlines characterized by irregular contours and dips of 3°-4° on their steeper southeastern flanks. The origin of these features is likely related to a 2-3 mile westward shift of the Cambridge Arch axis into Red Willow County, a shift that probably occurred during the Laramide Revolution but certainly occurred after deposition of the Stone Corral Formation (Permian System). When the shift took place, upfolding of the Lansing-Kansas City Groups over the arch generated present-day structures. Localization of the shift in Red Willow County may account for the abundance of dry holes and lack of Lansing-Kansas City production in wells along the western flank of the Cambridge Arch to the north and south of the study area.

Stratigraphic control of oil entrapment in the B zone is not understood. If the top of the B zone is an unconformity related to the regional unconformity on top of the Lansing Group, it may have influenced the accumulation oil. Although no fossil build-ups could be demonstrated, it appears that the primary control of oil entrapment is stratigraphic and that the ability of the zone to produce oil is primarily the addi-

tional porosity and permeability induced by genesis of the structure. The structural activity may have caused migration of oil from smaller stratigraphic traps into larger structural anticlines.

Areas peripheral to and between existing oil fields in the county are worthy of consideration for future production drilling in the B zone.

INTRODUCTION

Purpose and Scope of Investigation

Nine major oil fields, including the largest field in the state, produce from the B zone of the Lansing-Kansas City Groups in Red Willow County, Nebraska. Despite the abundance of data from more than 1,000 wells in the county, no comprehensive study has been made of this important pay zone. The purpose of this investigation is to use these data to describe the lithology, stratigraphy, and structure of the reservoir, and to interpret its geologic evolution as an aid to further exploration in the area.

Study Area

Red Willow County, an area of 720 square miles, is located in southwestern Nebraska (Fig. 1). It includes Townships 1-4 North and Ranges 26-30 West. McCook, the county seat, is the largest city in the county with a population of 8,285. An average yearly rainfall of 20 inches supplies local tributaries of the Republican River, which flows east through the county's low-relief plains. Principal access is provided by north-south U.S. Highway 83 and combined east-west U.S. Highways 6 and 34.

Although primarily a rural and agricultural area, production of 57 million barrels of crude oil from 21 oil fields has had a significant impact on the economy. Plate I shows the locations of the fields and Table 1 lists discovery dates and cumulative production figures for each oil field through March 31, 1977. All of the fields produce from one or more zones in the Lansing-Kansas City Groups and many have major production from the Oread Formation (Shawnee Group) or from a basal Pennsylvanian sand.

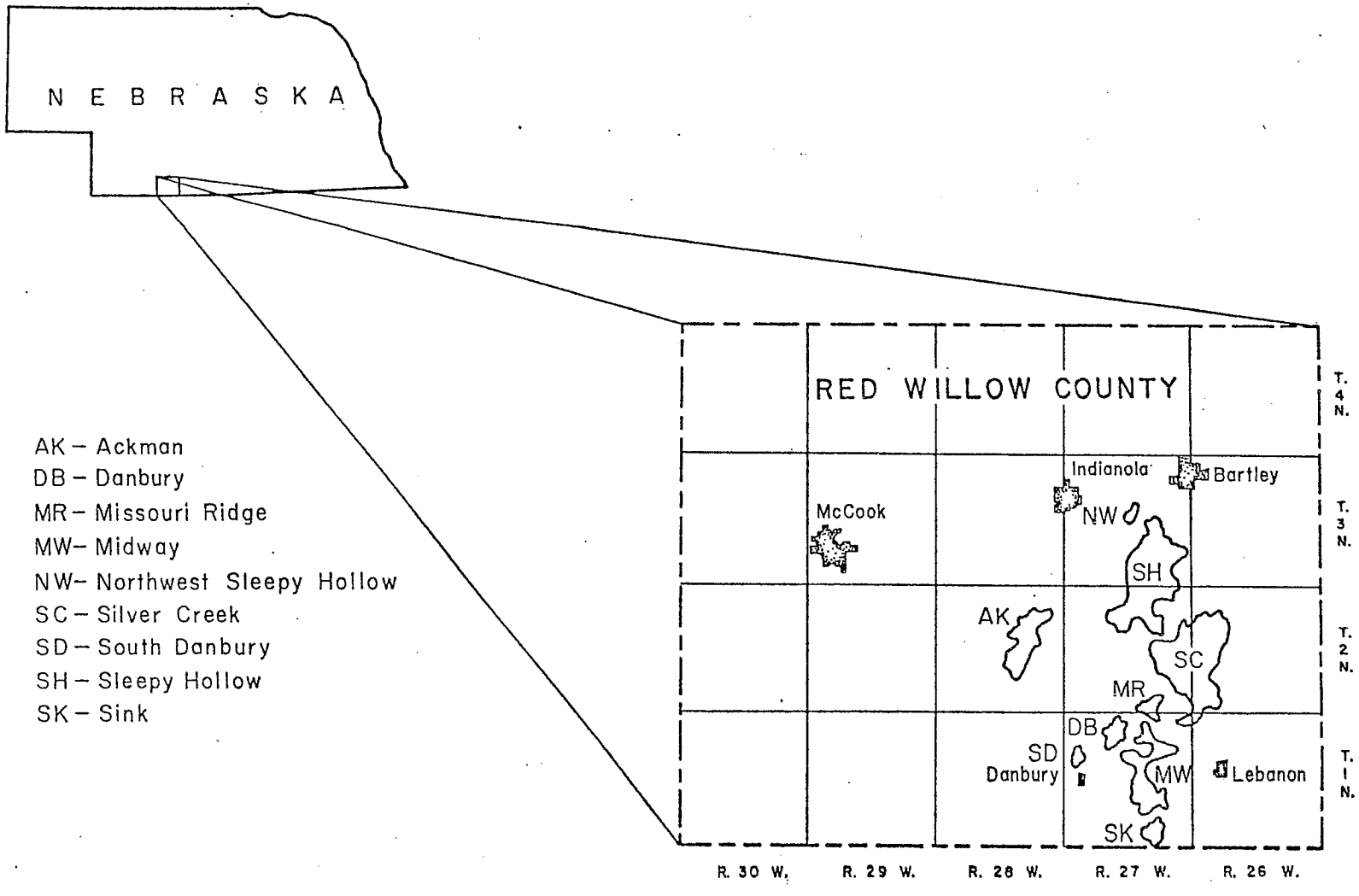

Figure 1. Map showing location of study area and major oil fields producing from the B zone.

TABLE 1

CUMULATIVE PRODUCTION OF OIL FIELDS IN RED WILLOW COUNTY, NEBRASKA

FIELD	DISCOVERY MONTH YEAR	CUMULATIVE PRODUCTION IN BARRELS OF OIL THROUGH MARCH 31, 1977*
Ackman	November 1959	4,699,118
Barger	July 1956	255,640
Bartley	February 1961	19,417
Base	July 1968	44,576
Bed Canyon	July 1966	863,938
Danbury	October 1970	448,784
Fondo	March 1963	51,838
Kevil	September 1968	29,553
Lebanon (new)	November 1970	30,770
Midway	May 1961	1,712,371**
Missouri Ridge	June 1962	213,396
North Ackman	February 1971	6,191 (Abandoned 1974)
NW Sleepy Hollow	July 1963	1,636,428
Paupers Ridge	August 1963	21,112
Poore	October 1957	20,797 (Abandoned 1965)
School Creek	April 1972	10,462
Silver Creek	July 1960	4,808,694***
Sink	March 1965	289,616
Sleepy Hollow	July 1960	39,262,472
South Danbury	March 1971	480,068
Zenith	August 1961	60,013

* Nebraska Oil and Gas Conservation Commission

** Combined with: North Midway (1975)

*** Combined with: South Silver Creek (1963)
West Silver Creek (1963)
West Wolverine (1963)
Wolverine (1964)
Lebanon (old)(1964)

For additional technical information on discovery, development, and production, the reader may consult Rocky Mountain Association of Geologists (R.M.A.G., 1961), Reed et al. (1959), Burchett et al. (1961), Burchett (1963, 1964, 1966), Larson (1962), and Petroleum Information's weekly reports and annual resumes.

Previous Work

A set of eight regional structure and thickness maps covering southwest Nebraska (Burchett and CArlson, 1963) provide a geologic framework for the study area. An unpublished cross section (Burchett) traces rock units of the B zone to outcrops in the lower Platte River valley in Sarpy and Cass Counties, Nebraska. Svoboda (1962, p. 136) attributes the lettered (A-F) designations of the Lansing-Kansas City Groups pay zones to informal oil field usage. This informal nomenclature was first published in 1961 (R.M.A.G., 1961).

Although no one has previously studied the B zone specifically, Larson (1962) studied the Lansing-Kansas City interval in the Ackman field. He describes the B zone as one of six limestone units interbedded with shales during rapid fluctuations of shallow sea levels and hypothesizes (p. 2079) that "Organic micro-build-ups over localized micro-structural-topographic features along with post-depositional modifications have resulted in competent reservoirs." He further explains that the important post-depositional modifications were 1) detrital accumulations resulting from wave action on the local organic build-ups and 2) basement faulting trending along the southeastern flanks of Ackman and Sleepy Hollow fields during Permian time.

A thesis by Sander (1966) primarily reiterates Larson's findings.

However, his (Sander's) fossil studies cause him to take exception to Larson's hypothesis that organic build-ups occurred on low-relief high areas.

Other articles of regional scope with information relevant to the study area will be cited where pertinent.

METHOD OF INVESTIGATION

Sources of Data

Information for the cross sections, maps, and appendices was gathered from Conservation and Survey files of geophysical logs, "top cards", cores, and completion reports. The geophysical logs used were of four types: 1) induction electrical survey (IES); 2) gamma ray-neutron; 3) dual induction laterolog; and 4) caliper. Of these, the IES logs are the most abundant (80-85%) and were easily correlated with the other logs. Cross section correlations (Plates II and III) of Cambrian and Precambrian strata are from Carlson (1967). Top cards were used to identify the Stone Corral Formation datum of Plate IV. All other correlations (Plates II-VII) are from direct examination of logs. Ten cores (core chips only) and 71 core descriptions (from completion reports) verify the geophysical logs and provide details of lithology and oil shows (Appendix A). The thicknesses of producing intervals in the B zone (Plate VIII) and initial production rates (Plate IX) also are from completion reports. Sample cuttings were not used in this study because of their overall poor quality. The Nebraska Oil and Gas Conservation Commission provided cumulative production figures for the oil fields (Table 1).

Procedures

Initially, two preliminary and two detailed cross sections were drawn from a total of 92 electric logs. Because these proved too unwieldy for practical use, they were reduced to one north-south and one west-east cross section (Plates II and III). The cores and core reports then were examined to aid correlation of logs for the construction of two thickness maps, one of the interval between the tops of the Stone Corral Formation and the B zone (Plate IV), and the other, of the B zone (Plate V). The cores and core reports also aided in the construction of the regional and detailed structure maps of the B zone (Plates VI and VII). Because the core reports indicated an association of fractures and oil shows, a map of the total thickness trends of producing intervals in the B zone (Plate VIII) and a map of initial production trends in the B zone (Plate IX) were drawn to demonstrate possible fracture patterns.

Many of the initial production rates had to be calculated for control points on Plate IX because of comingled production reported from other producing zones. Most of these rates were determined by multiplying the total rate of comingled production by the ratio of B zone productive thickness to the combined productive thickness of all producing zones in a given well. Because of the availability of swab test data in a few of the wells, some of the rates were similarly calculated using the ration of B zone production from swab tests instead of the productive thickness ratio. Rates calculated on this basis are likely to be more representative of the B zones' actual contribution to the comingled production.

STRATIGRAPHY

Framework

The following description of Precambrian to Quaternary rocks in Red Willow County is generalized. The reader is referred to Larson (1962) for details of local subsurface stratigraphy and to Condra and Reed (1959) for a comprehensive treatment of the complete geologic section in Nebraska. Figure 2, which depicts an electric-log and columnar section for a typical well in the county, shows the stratigraphic position of rock units referred to in this report.

The stratified rock sequence of the study area rests on a basement of granitic and metamorphic rocks of Precambrian age. Immediately overlying this basement, in many areas, is a zone of untransported, weathered material generally referred to as "granite wash" of Precambrian age (Carlson, 1967, p. iv). Disconformably overlying the Precambrian are the Cambrian Lamotte (Reagan) sandstone and the Cambro-Ordovician Bonneterre (Arbuckle) dolomite (Plates II and III, Fig. 3). Burchett and Carlson (1963, Map 7) show that the north-northwest trending east margins of these formations underlie, respectively, western (R. 29 W., R. 30 W.) and extreme southwestern (Tps. 1 and 2 N., R. 30 W.) Red Willow County. According to Reed (1954, p. 113), erosion removed these formations from the crest of the Cambridge Arch in the central and eastern parts of the county (Fig. 3). Late Ordovician, Silurian, Devonian, and Mississippian strata are missing from the entire county (Fig. 3).

Much of the Pennsylvanian section is present in Red Willow County. The oldest Pennsylvanian unit present is the Cherokee Group, which oversteps the Lamotte Sandstone and nonconformably onlaps Precambrian rocks

ELECTRIC LOG AND COLUMNAR SECTION
TYPICAL WELL IN RED WILLOW COUNTY
NEBRASKA

500–1900 feet drill depth

(Permian, Jurassic and Cretaceous shales and sandstones)

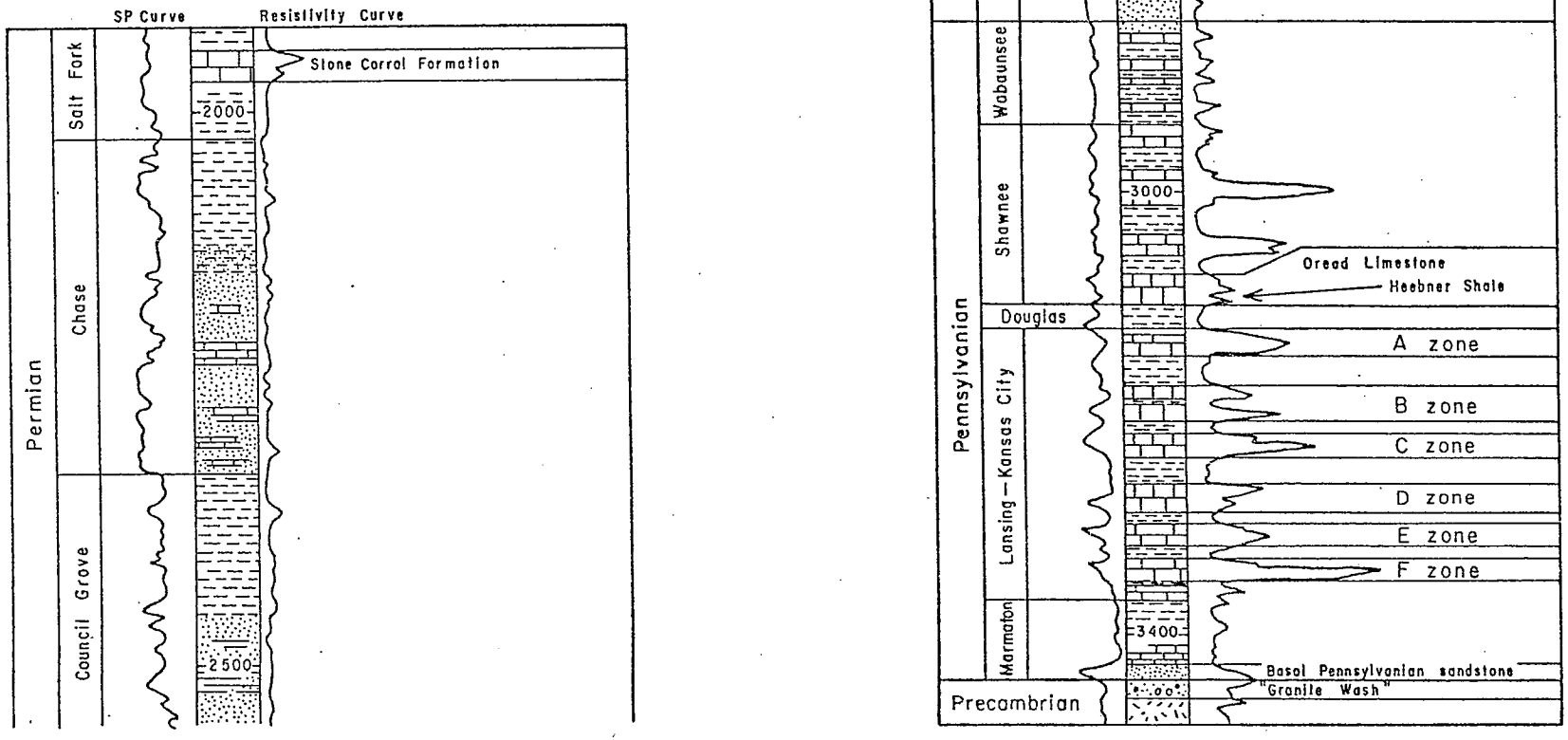

Figure 2. Electric log and columnar section of a typical well in study area (modified after Svoboda,1962).

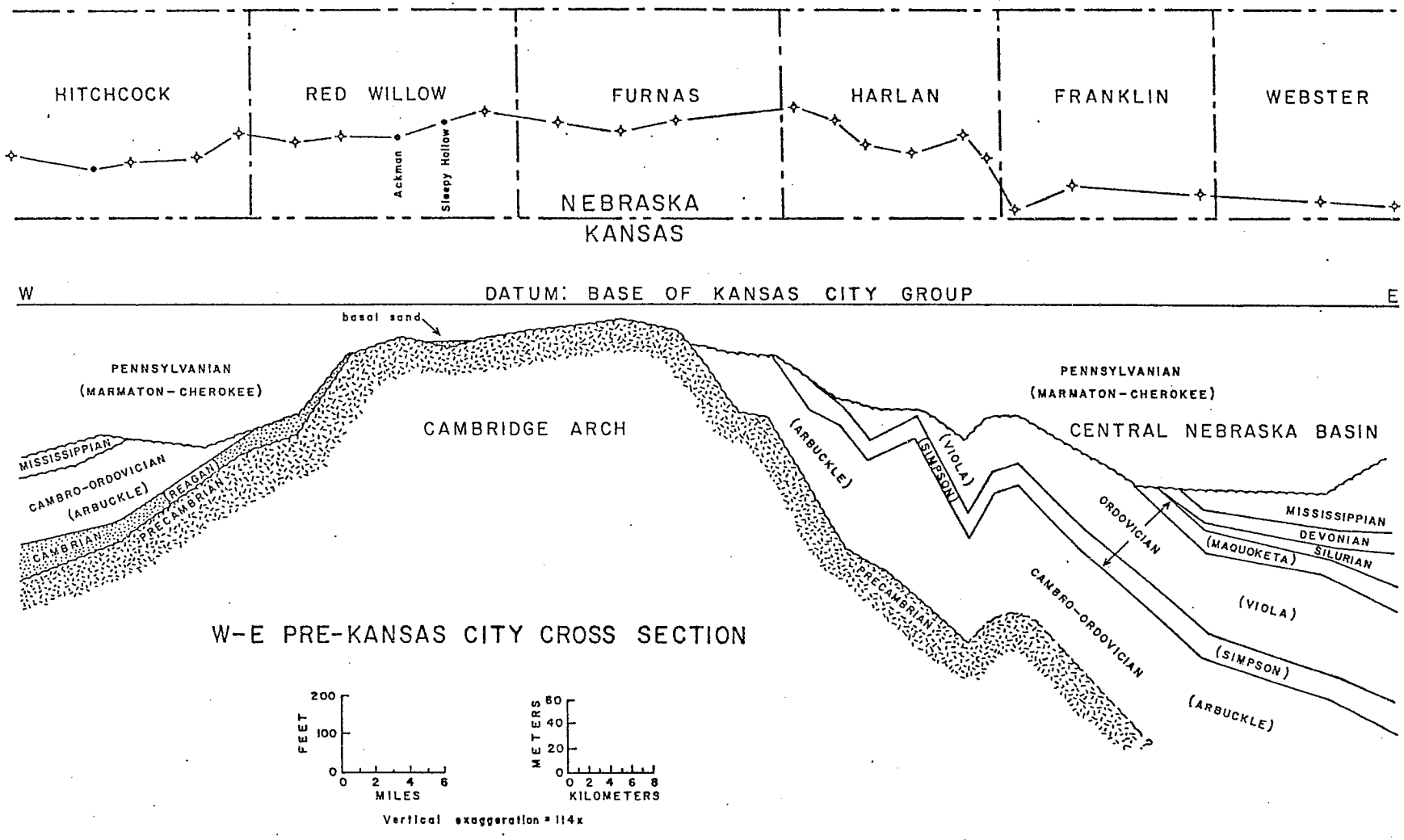

Figure 3. West-east regional cross section in southern Nebraska showing stratigraphic and structural relations at the beginning of Kansas City deposition (modified after Larson,1962).

between wells two and three of Plate III. The Marmaton Group overlaps the Cherokee to rest nonconformably on the Precambrian farther east. Miller (1966, Pl. IV) shows that the Marmaton is present throughout the study area. Burchett (1977, personal comm.) thinks the top of the Marmaton Group is probably a disconformity locally as it is regionally in eastern Nebraska and adjacent areas.

The Lansing-Kansas City Groups are considered together in this report because of their combined economic importance. Included in these groups are pay zones A-F, lettered in descending order (Fig. 2). The second of these, the B zone, will be described in detail later in the report. The limestone and shale sequence in which these zones occur are traceable to outcrop localities in eastern Nebraska and Kansas (Svoboda, 1958). Burchett, in an unpublished electric-log cross section, tentatively traces the Lansing-Kansas City rock units from eastern Nebraska (Cass County) through the study area into southwestern Nebraska. From his cross section, the top of the Lansing Group is placed at the top of the South Bend Member of the Stanton Formation in the outcrop area. Tracing the South Bend into the study area locates it between the A and B zone locally. However, the South Bend is missing in much of the study area so that the actual contact between the Lansing and Douglas Groups probably occurs between the A and B zones locally. Because of this and the inclusion of the A zone in the Lansing Group by drillers, the contact is represented by a dashed line on Plate II and III.

Overlying the Lansing-Kansas City Groups are the Douglas, Shawnee, and Wabaunsee Groups. The Douglas Group is represented by silty red sandstone and red shale. The basal unit of the Shawnee is the Oread Formation, which includes the Heebner Shale Member (Fig. 2). The Heebner is a black fissile

shale recognized on electric logs and in samples as a marker bed in the Mid-Continent and serves as datum for Plates II and III. The Oread is also important as a reservoir in the Ackman field. The succeeding Pennsylvanian consists of the Wabaunsee Group, a series of interbedded shale, limestone, and thin sandstone beds.

Permian rocks disconformably overlie the Pennsylvanian section and are difficult to correlate both regionally and locally because of facies changes. The placement of the Permo-Pennsylvanian boundary is a subject of considerable debate (Condra, 1949, p. 6, Merriam, 1963, p. 101). The Permian rocks consist primarily of shales with a few thin limestone, anhydrite, and sandstone beds. The Stone Corral Formation (Fig. 2) is a thick anhydrite that serves as a regional subsurface stratigraphic marker because of its distinctive log character.

Although no rocks of the Triassic System are present in Nebraska, rocks of both the Jurassic and Cretaceous System are present in Red Willow County. Whether absence of the Triassic rocks is due to nondeposition or erosion is not known (Condra and Reed, 1959, p. 23). The Jurassic System is represented only by shales of the Morrison Formation. Approximately 1,300 feet of Cretaceous shales, sandstones and few limestones overlie the Morrison. These Cretaceous strata consist, from oldest to youngest, of the Dakota Group, Graneros Shale, Greenhorn Limestone, Carlile Shale, Niobrara Chalk, and Pierre Shale. The Niobrara and Pierre are exposed in the county.

Immediately overlying the Cretaceous is the Ogallala Formation of Tertiary (Pliocene) age. It consists largely of poorly to well consolidated sands and gravels that are exposed in the deeper valleys. Unconformably overlying the Ogallala is a surficial mantle of Quaternary loess and alluvium.

B Zone

The term "B zone" in this report requires clarification. As might be expected when the nomenclature is informal, the term has various usages. Contributors to the R.M.A.G. Colorado-Nebraska Oil and Gas Field Volume (R.M.A.G., 1961) identify this zone differently (Fig. 4). Of the six sets of limestone resistivity peaks on electric logs below the Oread Formation (Fig. 2), the second set down from the Oread is designated as the B zone by all contributors. However, the vertical limits of each zone are uncertain. Kincaid (R.M.A.G., 1961, p. 325) identifies the top of each zone but leaves the lower boundaries unspecified (Fig. 4A). Trimble (R.M.A.G., 1961, p. 305) labels the apices of the peaks without giving either upper or lower limits to any zone (Fig. 4B). Larson (R.M.A.G., 1961, p. 303) restricts the upper and lower limits of the B zone to the thick upper limestone and eliminates the thinner, lower limestone (Fig. 4C). Later, Larson (1962, p. 2086) describes the lower limestone as a "persistent 3-foot stringer of limestone dividing the shale section" between the B and C zones.

In this study, the B zone is limited to the rocks represented by the second set of limestone resistivity peaks below the Oread Formation as identified on electric logs. The upper and lower limits are illustrated in Appendix A. This informal definition excludes the massive shale section below the limestone peaks but does include, because of production from four wells, the lower limestone stringer and intermediate thin shale that Larson excludes.

A formal rock stratigraphic nomenclature can be applied to rocks of the B zone. Burchett in his unpublished cross section tentatively equates

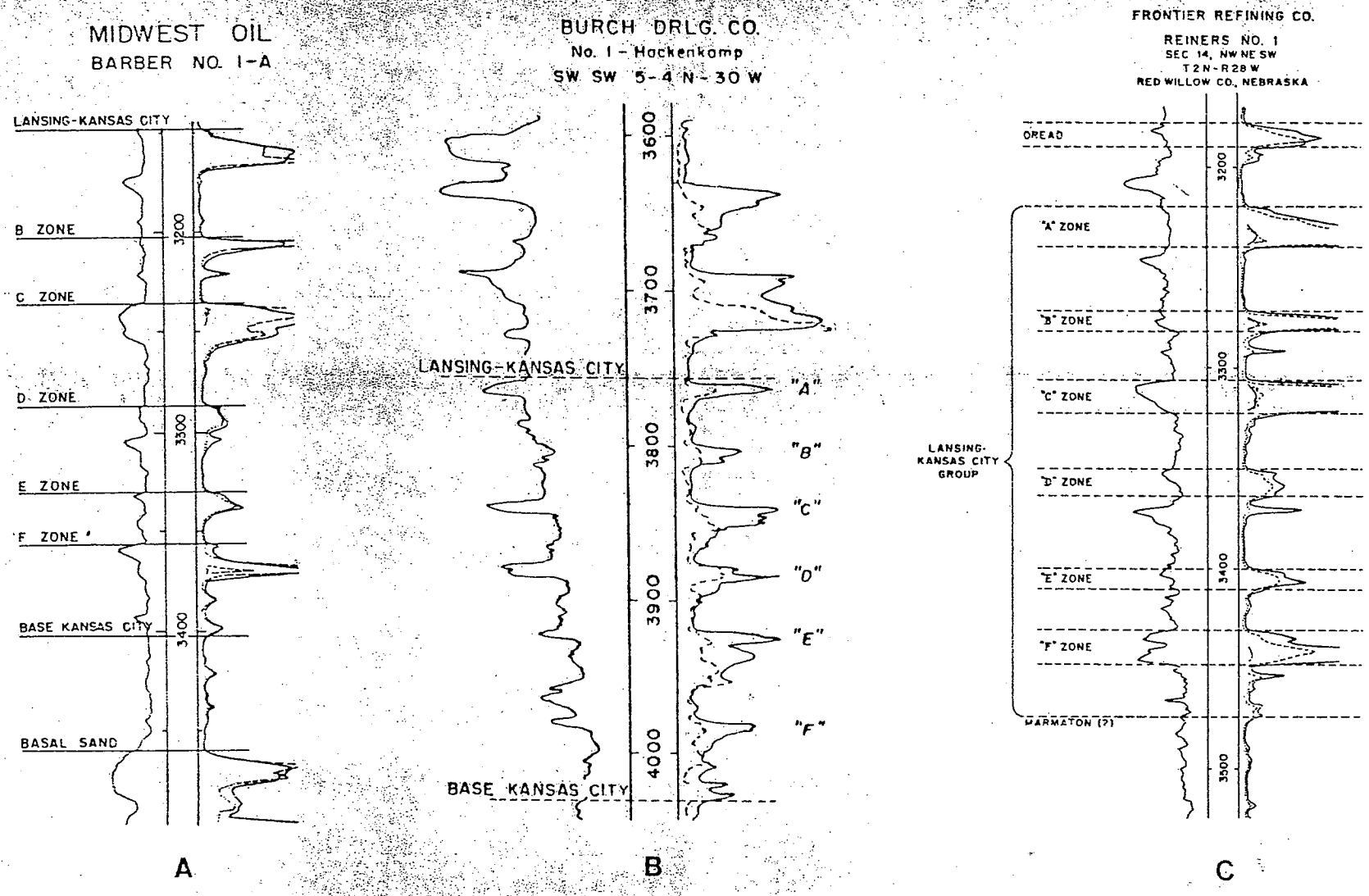

Figure 4. Various usages of the term "B zone." Modified after contributors to R.M.A.G. 1961: A - Kincaid, B - Trimble, C - Larson.

three members of the Stanton Formation to the B zone. From bottom to top they are: Captain Creek Limestone, Eudora Shale, and Stoner Limestone. In a master's thesis, Juilfs (1953) does not specifically equate the B zone to formal units but does assign to the Iola-Wyandote Formations the resistivity peaks recognized in this study as the B zone. Of the two sections, Burchett's is favored since it is based on better well control and is 100 miles closer to outcrops. Moreover, Juilfs' study was plagued with problems of inadequate samples and missing or poor quality logs.

Much of the stratigraphic character of the B zone is illustrated by the cross sections of Plates II and III and by the thickness map of Plate V. As seen in the sections, the B zone has fairly uniform log character. Generally, it is recognizable by two limestone resistivity peaks, the upper one dominant. However, in areas of maximum thinning, the lower limestone peak is lost. Although the sections seem to indicate a thinning trend to the north and west, such a trend is more apparent than real. Plate V, a better depiction of the zone's thickness, shows that the thickness ranges from a minimum of 10 feet (Sec. 19, T. 2 N., R. 30 W.) to a maximum of 37 feet (Sec. 23, T. 1 N., R. 27 W.), that the dominant thickness is 20 to 25 feet, and that the overall pattern is one of random thickening and thinning, which is best illustrated in the areas of greatest well control.

The upper contact of the B zone is probably an unconformity in many parts of the county. As previously mentioned, the true top of the Lansing Group is the South Bend Limestone, which is missing from much of the study area. Where the South Bend is missing, the Plattford Shale overlying it and the Rock Lake Shale underlying it would overlie the Stoner as indistinguishable red and gray shale. Several other criteria may be suggestive of an unconformity at the top of the B zone:

1) Very irregular detailed structure contours on top of the zone, many of them closed depressions (Plate VII).

2) Irregular thickness lines of the Stone Corral to B zone interval (Plate IV).

3) The presence of a six-foot thick red sandstone (clastic) between the (nonclastic) A and B zones in the Ackman field (Larson, 1962, p. 2085).

4) Characterization of the B zone as a "reworked limestone-breccia, slightly fossiliferous and deriving its reservoir capabilities from the development of vugs between pieces of reworked limestone" (Larson, 1962, p. 2086).

5) Shale and calcite filled vugs and hair-line fractures, drusy calcite on fossils and in vugs, and shell casts (Larson, 1962, p. 2088); and this report, Appendix A).

While no one of these observations is sufficient for the interpretation of an unconformity, it is as Krumbein (1942, p. 58) emphasizes, the sum total of criteria and not any one criterion that identifies a subsurface unconformity. Svoboda (1962, p. 136), in describing the limestones of the Lansing-Kansas City Groups, attributes secondary porosity in these zones to weathering processes before burial. If all these data and the suggested interpretations are related to the widely recognized unconformity at the top of the Lansing in other areas (Merriam, 1963, p. 117; Condra and Reed, 1959, p. 50; and Condra, 1949, p. 31), then the top of the B zone is an unconformity.

However, because such an unconformity is not obvious on the electric-log sections, the top of the B zone is drawn as a conformable contact on Plates II and III.

The basal contact of the zone appears to be conformable. Nevertheless, the loss of the lower limestone in areas where the B zone is less than 15 feet suggests that more study is needed to establish the nature of this contact in those areas.

Lithologically, the B zone limestones are predominantly sandstones or wackestones, a few are packstones, and even fewer are crystalline carbonates according to the Dunham (1962) carbonate classification based on depositional texture. This classification implies the B zone was deposited for the most part in relatively calm water that apparently inhibited or at least limited grain-producing organisms (Dunham, 1962, p. 118). The secondary features of vugs, fractures, casts, and fillings have already been mentioned. The lower and upper limestones were lithologically indistinguishable except for the reworked appearance of some parts of the upper limestone. The thin intervening Eudora Shale between the two limestones is generally green to gray and contains calcareous zones that make its upper and lower limits hard to define on logs and in cores.

Fossils in the B zone are important for interpreting the depositional environment. Although descriptions of fossils in Appendix A generally do not specify the types present, some include crinoid stems, ostracods, fusilinids, bivalves, or sponge spicules. The core material examined by the author has a predominance of fusilinids, a few crinoid stems, and a lesser abundance of other fossil types. These findings are in general agreement with the relative abundance of fossil types quantified by Sander (1965, Tables 2-5) for the Lansing-Kansas City interval. At his three sample sites in Red Willow County, Sander found 60% fusilinids, 20% crinoid columnals, and the remaining 20%, brachiopods, bryozoans, gastropods, cephalopods, and ostracods.

Using these data, Sander (1965, p. 34) refutes Larson's hypothesis of organic build-ups over low-relief high areas. He gives the following three reasons: 1) fusilinids, the predominant organisms present, are not known to occur in reef-like deposits; 2) fossil populations are just as abundant off-structure as on-structure; and 3) structurally well-located tests have proven barren in the Oread-Lansing-Kansas City Groups.

Carlson (1977, personal comm.) states that his examination of sample cuttings indicated that the limestones of the Lansing-Kansas City have subtle but discernible thickenings where the abundance of fossils increases. He believes the fossil build-ups Larson refers to are not biohermal but, rather, a greater density of organisms over slight rises on the sea floor where more favorable conditions of light, temperature, oxygen, and turbulence probably existed. He suspects that the large-scale thickenings in the oil-producing limestones of the Lansing-Kansas City Groups in southeastern Kansas may be present locally in the study area, but on a greatly reduced scale.

Figure 5 shows the unmodified Figures 5 and 12 of Larson (1962), who presents them as evidence that the B and C zones and the Oread Formation are especially characterized by detrital (fossil) build-ups over localized structures. However, neither of Larson's figures support his interpretation. His Figure 5, which is an west-east cross section through the Ackman field, shows no thickening or thinning of the B zone even though the vertical exaggeration is 32 X. Instead, it shows only present-day structural and stratigraphic relationships with exaggerated slopes (maximum slope, <3°). Larson's Figure 12 demonstrates variations in the thickness of the C zone and the Sleepy Hollow Sand (basal Pennsylvanian sand) but shows no spatial or temporal relationship between them.

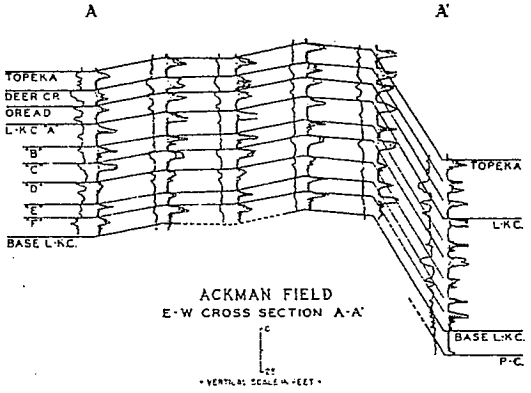

FIG. 5.—West-east cross section A-A′ through central part of Ackman field. Figure 2 shows location.

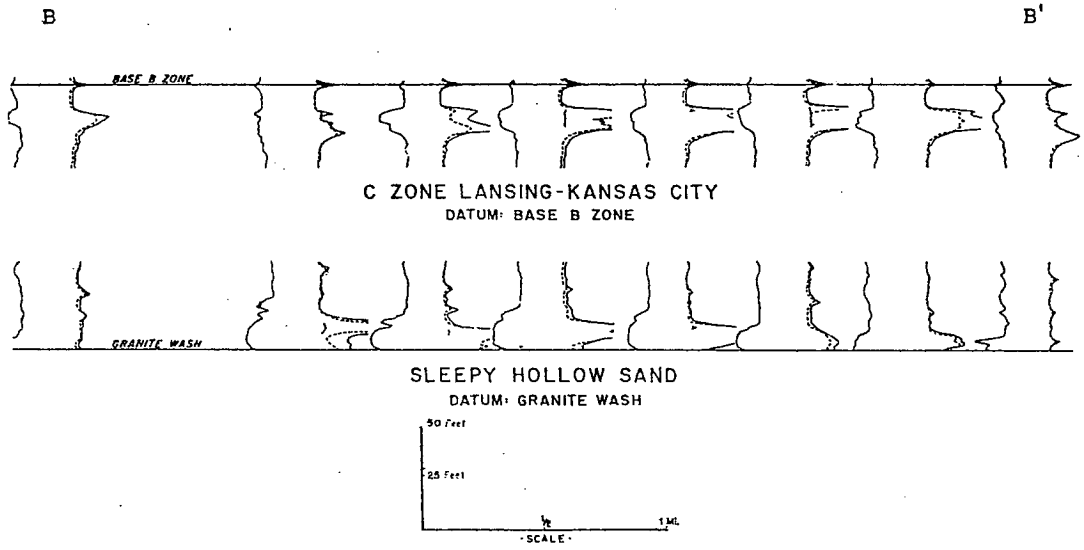

FIG. 12.—West-east cross section B-B′ through central part of Sleepy Hollow field. Upper section shows C zone of Lansing-Kansas City and lower section illustrates build-up of Sleepy Hollow basal sand.

Figure 5. Evidence offered by Larson (1962) to show detrital build-ups of the B and C zones and the Oread Formation over localized (paleo?) structures. This author believes that Larson's hypothesis may be valid but is not substantiated by these sections.

Conclusions

From the foregoing, the following conclusions may be made regarding the B zone in Red Willow County:

1) The zone has a random pattern of thickening and thinning which cannot be related to fossil content or paleotopography.

2) The top of the zone may be an unconformity related to the regionally recognized unconformity at the top of the Lansing Group.

3) Fossil build-ups have not been documented in the zone.

4) Fossils in the zone are definitely not of a biohermal nature.

STRUCTURE

Regional Structure

Three major structural features are present in Red Willow County and/or adjacent areas. These are, west to east, the Denver Basin (Denver-Julesburg Basin), the Cambridge Arch, and the Salina Basin (Central Nebraska Basin). The eastern limit of the Denver Basin is well out of the study area as is the western limit of the Salina Basin (Fig. 6). Red Willow and the adjacent counties are dominated by the Cambridge Arch, which is a large northwest-trending anticline continuous with the Chadron Arch. To the southeast it extends into Norton and Decatur Counties, Kansas, and is separated from the Central Kansas Uplift by a structural saddle (Merriam and Geobel, 1954, Fig. 3). As traced from north to south, the present axis of the arch (solid line, Fig. 6) curves to the southwest in eastern Frontier County to enter the northeast corner of the study area where it curves back to trend southeast into Kansas.

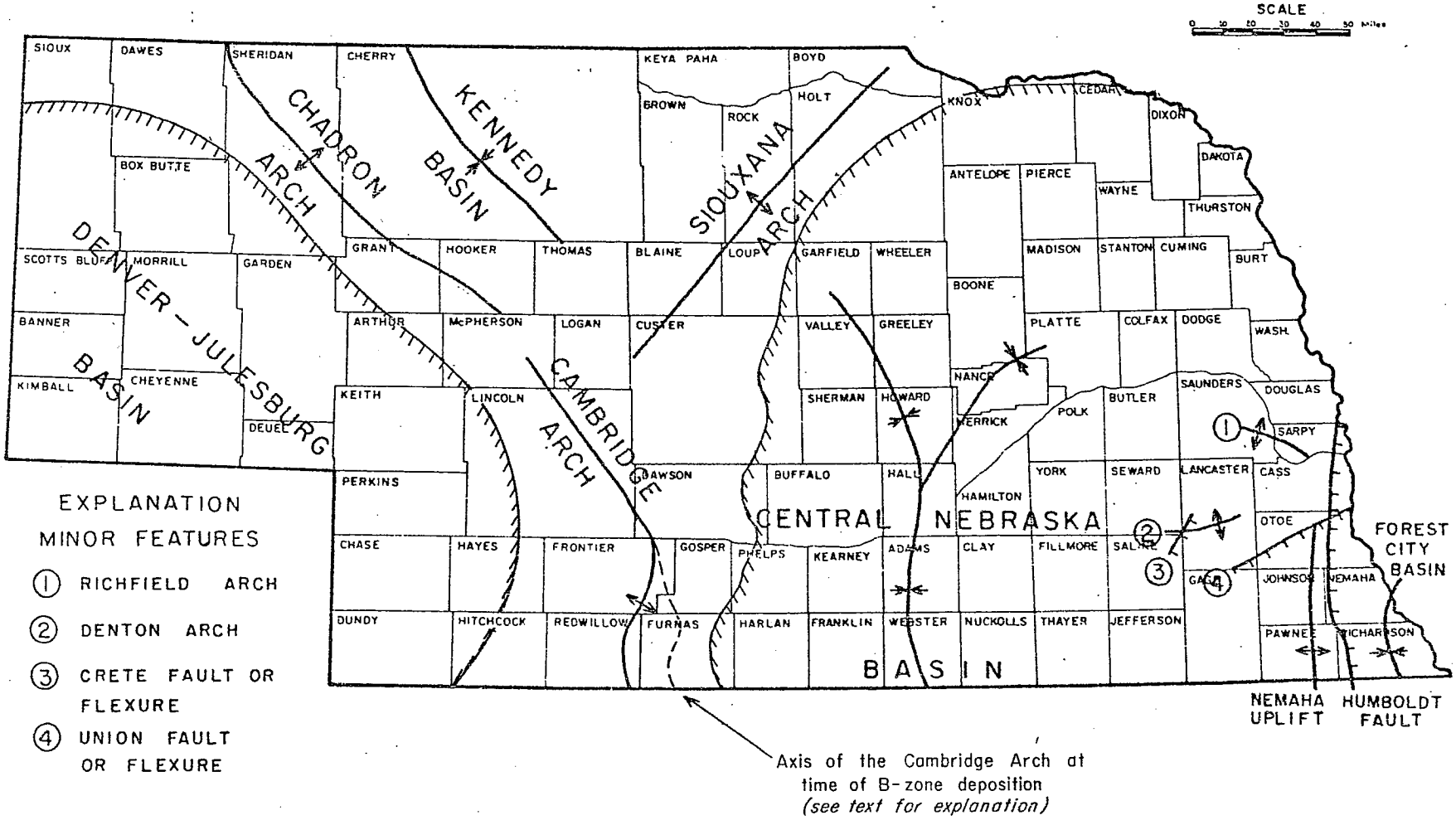

Figure 6. Modified after Carlson (1970). The east limit of the Denver - Julesburg Basin is from Martin (1965, p. 1913), the west limit of the Central Nebraska Basin from Reed (1954,p.114).

According to Reed (1954) and Merriam and Atkinson (1955), several important diastrophic movements have occurred along the Cambridge Arch. The following is from the historical reconstruction by Reed (1954, p. 113):

1) Inundation by Upper Cambrian and Lower Ordovician seas on the southeastern flank of the Siouxana Arch upland; no Cambridge Arch.

2) Cambridge Arch broadly uplifted by the end of Arbuckle (Lower Ordovician) time and Cambro-Ordovician sediments eroded from the west.

3) Some uplift, folding, and erosion at the end of Devonian time with subsequent inundation by Mississippian seas from the east and southeast resulting in deposition over the southern part of the arch.

4) Extensive folding and broad uplift of the arch at the close of Mississippian time accompanied by stripping of lesser thicknesses of pre-Pennsylvanian sediments over the crest.

5) Pennsylvanian seas overide the arch from the south and southeast, depositing progressively thinner and redder sediments northwestward. Some contemporaneous uplift over the arch as evidenced by thinning of many rock subdivisions.

6) Inconclusive evidence of rejuvenation of the Siouxana Arch in early Permian. Generally no great interruption of sedimentation between Pennsylvanian and Permian.

7) General uplift at the end of Permian time with no Triassic sediments present and Jurassic sediments not deposited much east of the west-central part of the state. Siouxana Arch actively uplifted for the last time in post-Permian time.

8) Invasion of Cretaceous sea from the west with some contemporaneous uplift of the arch.

9) Strong post-Cretaceous upfolding of the arch and extensive

erosion over the arch.

10) Tertiary continental deposition over the unconformity. Some east to southeast post-Tertiary tilting.

Merriam and Atkinson (1955) studied the tectonic history of the Cambridge Arch in Kansas. Figure 7 is a summary of their findings in chart form. Although a more detailed study, it is in general agreement with Reed's work.

Miller (1965) notes that a westward shift of the Cambridge Arch axis from Furnas County into Red Willow County is observable by comparing his thickness map of pre-Kansas City Pennsylvanian rocks with Carlson and Reed's (1961) structure contour map of the Cretaceous Greenhorn Formation. Miller does not speculate on the time of this occurrence.

B Zone Structure

Local structure of the B zone on a regional scale is shown on Plate VI. The B zone, on the average, has a dip of about 16 feet per mile (<1°). North of McCook, in the Bed Canyon field area, an abrupt change in dip to 700 feet per mile (7½°) is attributed to faulting (Carlson, 1977, personal comm.). The axes of three very low-relief anticlinal trends are shown from west to east as lines A-B, A-C, and A-D in the eastern half of the county. The location of these axes correspond with the oil field areas. Similar axes are detectable on CArlson's (1966) map of the present-day configuration of the Precambrian.

These associations prompted the construction of a more detailed structure map of the B zone (Plate VII). The five-foot contour interval used on this map reveals irregularities on the regional structures des-

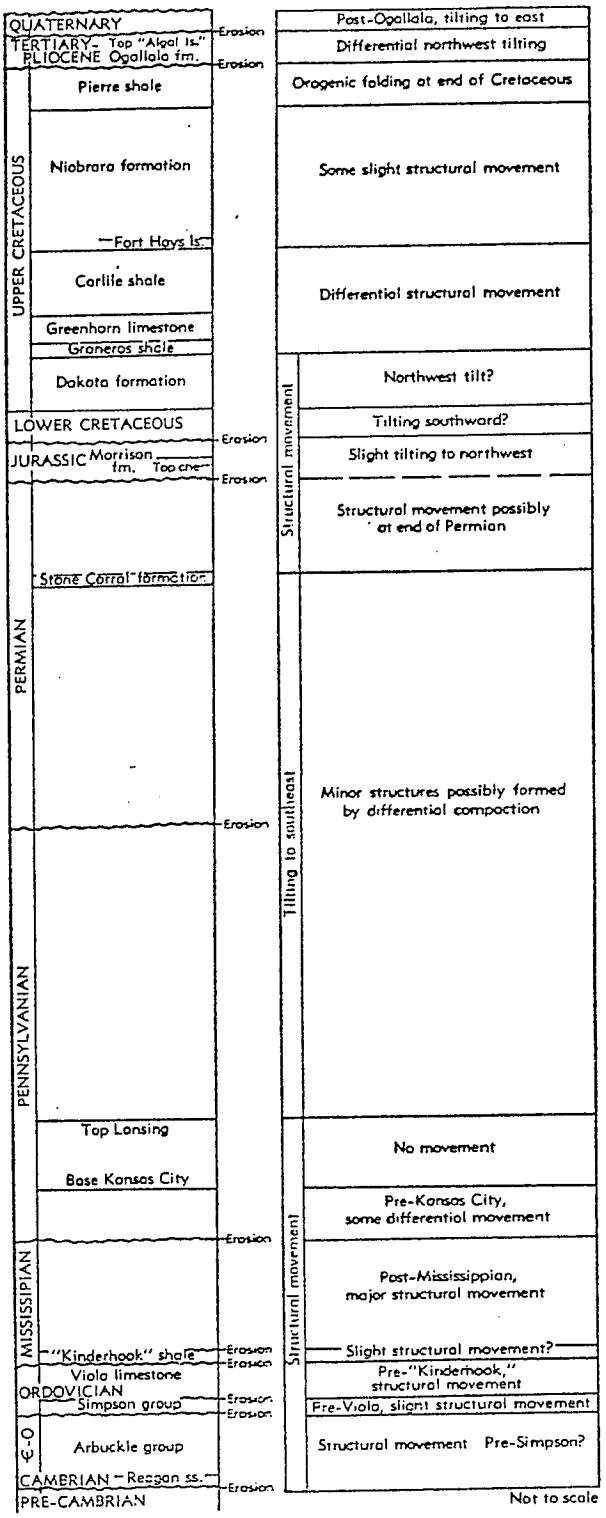

Figure 7. Summary of the structural development of the Cambridge arch and immediate vicinity. Not drawn to scale.

cribed on Plate VI. Many of the anticlines are flattened with numerous small closures of both positive (high) and negative (depressed) relief. This is especially noticeable in the Silver Creek, Sleepy Hollow, and Northwest Sleepy Hollow field areas. Also, many of the anticlines have steeper southeastern flanks.

The best developed closures of positive relief are in the Ackman, Danbury, and South Danbury fields. There, closures range from 22 to 27 feet and occur along axes of the regional anticlines. Numerous other closures of less than five feet are present in the other field areas.

Areas of closed depressions vary in lateral extent from many sections to less than one-eighth of a section. Four large depressions are easily located in the northern two-thirds of the map area. All the other, smaller, depressions are located in Sleepy Hollow field (Sec. 26, T. 3 N., R. 27 W., and Secs. 3, 10, 11, T. 3 N., R. 27 W.). Three of these small depressions have only one well for control, but all available data indicate these are valid control points. The maximum slope in any closed depression is two degrees (Sec. 3, T. 2 N., R. 27 W.) and the maximum relief is 22 feet (Sec. 18, T. 2 N., R. 27 W.).

In four parts of the map areas, steeply plunging southeastern flanks of northeast-trending anticlines are prominent. However, as with the areas of closure, these features are magnified by a small contour interval. These flanks have a maximum slope of only three degrees (Sec. 9, T. 1 N., R. 27 W.).

Genesis of Structures

Two hypotheses to explain the anticlines are offered by previous

workers (Miller, 1966; Larson, 1962). One is Miller's draping concept, wherein localized highs result from draping during sedimentation over Precambrian knobs. Although Miller presents no supporting evidence, he cites the findings of Walters (1946) as directly applicable to southwestern Nebraska. Miller calls the anticlines "pseudoanticlines."

Larson (1962, p. 2082) dismisses the draping concept, citing a map that shows an abrupt increase in the thickness of the Stone Corral to Lansing-Kansas City interval on the east sides of Ackman and Sleepy Hollow fields. He reasons that the interval thickness should increase equally on both flanks of an elevated feature if draping occurred, and that the localization of fractures to these structures further refutes the draping hypothesis. He explains that the steeper southeastern dips reflect probable faulting in the basement complex.

Neither a hypothesis of draping or of faulting is necessary to explain the present-day structure of the B zone. Miller and Larson confuse paleostructure with present-day structure.. For support of the draping concept, paleoknobs at the time of deposition of the draping sediment would need to be demonstrated. No one has demonstrated this locally. Thickness maps of pre-Kansas City Pennsylvanian rocks (Miller, 1966, Plate IV; Burchett and Carlson, 1963, map 6) definitely show that the axis of the Cambridge Arch was east, in Furnas County (Fig. 6, dashed line) and give no suggestion of Precambrian knobs or structural trends in the oil field areas at the beginning of Kansas City deposition. An unpublished thickness map of the Pennsylvanian System by Burchett shows that the axis was in Furnas County at the end of Pennsylvanian deposition. A thickness map of the interval between the tops of the Stone Corral and the B zone (Plate IV) demonstrates that by the end of Stone Corral deposition the area was tilted to the southeast and that no movement occurred

on the arch during the time represented by this stratigraphic interval. This is compatible with Meriam and Atkinson's findings (Fig. 7, this study).

From these maps it may be concluded that the present-day structures seen in Red Willow County on top of the B zone evolved with a westward shift (approximately 2-3 miles) of the axis of the Cambridge Arch from Furnas County into the oil field areas locally, and that these structures can be adequately accounted for as folds in the overlying strata. Because the present axis of the arch is easily recognized on a present-day structure map of the top of the Cretaceous, it is probable that the axis shifted at least as recently as Cretaceous time. It is certain that the shift occurred sometime after the Stone Corral Formation was deposited. The shift probably occurred during the Laramide revolution.

OCCURRENCE OF OIL

Relationship of Structure, Stratigraphy, and Oil

An association of structure and oil fields is apparent on the regional and detailed structure maps of the B zone (Plates VI and VII). However, by comparing these structure maps with the maps that show all wells producing from the B zone in the study area (Plates VIII and IX), it is obvious that most wells in Sleepy Hollow field and virtually all wells in Northwest Sleepy Hollow field do not produce from the B zone even though they are favorably located with respect to structure. Production from the B zone is not a simple function of structure in those oil fields nor in the fields that do produce from the zone. A stratigraphic control is implied.

Mapping total thickness of producing intervals in the B zone (Plate VIII) and initial production rates of the B zone (Plate IX) gives some indication of the degree of structural versus stratigraphic control. Both maps show trends that correspond closely with the structures seen on Plate VII and, where such is the case, may be interpreted as indicative of probable fracture trends. The best example of this is the trend between South Danbury field and the western part of Silver Creek field. Wilkinson (1953, p. 264) similarly used initial production trends to reveal fractures in the Sprayberry Reservoir of West Texas.

Those parts of Plates VIII and IX where no fracture pattern is apparent may be indicative of a stratigraphic influence. For example, the high initial production rates in the northern part of Silver Creek Field may be more related to stratigraphic than structural control. The B zone production in the smaller fields and in the southwestern part of Sleepy Hollow Field are difficult to relate to any kind of trend and are assumed to be primarily controlled by stratigraphic factors.

The nature of stratigraphic controls of the B zone in Red Willow County are elusive. Unfortunately, more can be stated about what is not a stratigraphic influence than what is. Neither thickness nor lithology of the zone show trends that can be correlated with production. Although possible fossil build-ups may have been an important stratigraphic control, they are not documented in the literature or expressed in the thickness of the zone as defined in this study. No paleotopographic features have been demonstrated that would have influenced the depositional environment of the zone or the accumulation of oil. However, if an unconformity is present at the top of the zone, its development may have influenced the occurrence of oil. It is assumed that the source of the

oil is indigenous to the limestones.

It appears that the primary control of oil entrapment in the B zone is stratigraphic but that the ability of the zone to produce oil is primarily the influence of late structural adjustments related to the tectonic history of the Cambridge Arch. These adjustments may have provided the additional porosity and permeability necessary for possible migrations of oil from relatively small isolated stratigraphic traps into larger structural traps. At the very least, structural activity increased the permeability of existing traps.

The westward shift of the Cambridge Arch affected only Red Willow County. This may account for the abundance of dry holes and lack of production from the Lansing-Kansas City to the north and south of the study area on the western flank of the Cambridge Arch.

Recommendations

Regarding future production, several areas recommended for further analysis are shown on Plates VIII and IX. Each is an area where favorable trends extending from producing areas correspond on both plates and where favorable structure is indicated on Plate VII. Such areas may have the combined structural and stratigraphic controls conducive to productivity. A complete detailed analysis of all available data for the surrounding wells should provide a more complete rationale for drilling than this study offers.

Recommendations of a more academic nature are: 1) isopach the B zone as defined by Larson and examine rotary cuttings from selected wells to document the presence or absence of fossil build-ups and estab-

lish their relations to production; and 2) determine whether the upper contact of the B zone is an unconformity, and, if so, determine its lateral extent and relation to oil production.

SUMMARY

Production in the B zone is from combined structural and stratigraphic traps. Although the structural influences are easily identified, the stratigraphic controls are yet to be demonstrated. The B zone has more potential for new oil wells on the periphery and between existing fields, which makes the zone worthy of more drilling activity.

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2) Structure--top Stone Corral (Perm.)
3) Structure--top Admire (Perm.)
4) Structure--top Lansing (Penn.)
5) Structure--base Kansas City (Penn.)
6) Isopach--base Kansas City to base Penn.
7) Isopach00distribution of pre-Penn.
8) Structure00top Precambrian.

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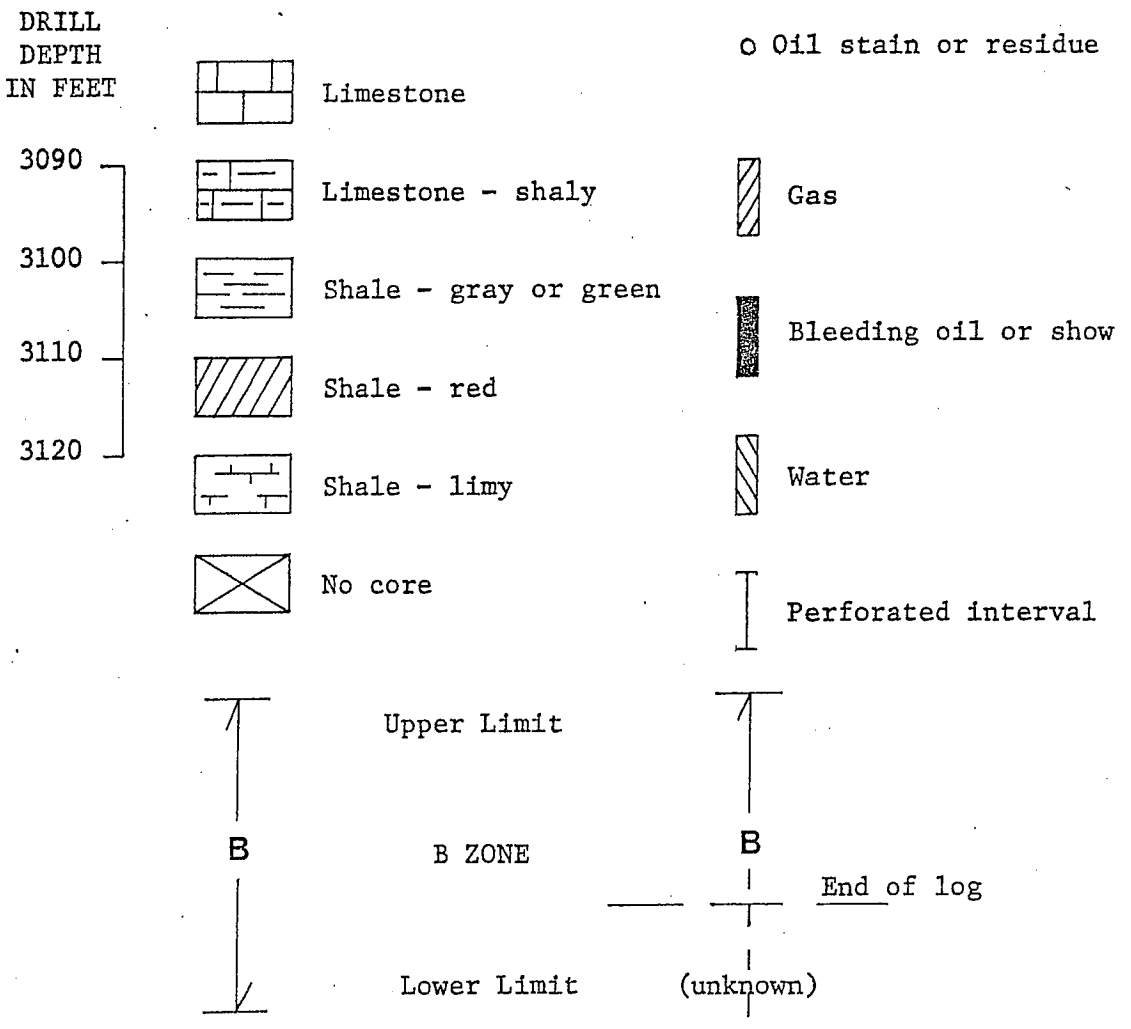
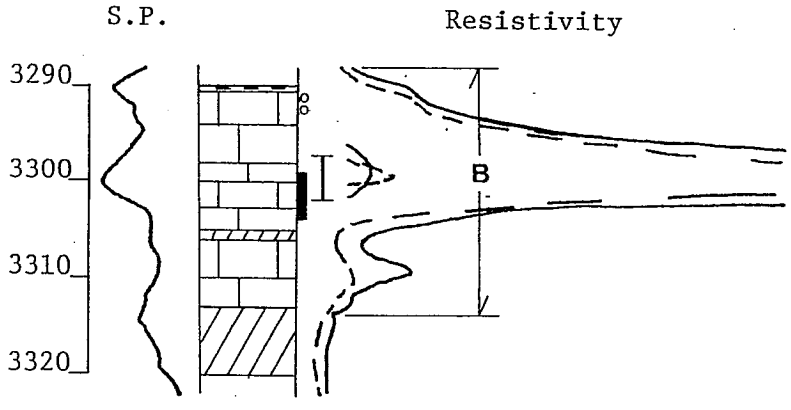
APPENDIX A

This appendix shows electric logs and core descriptions of the B zone in selected wells. Locations of these wells are identified by page number on Plate I. Lithic descriptions are edited core reports except where marked by an asterisk (*), in which case the cores were examined by the author. For the examined cores, Dunham's carbonate classification and Munsell color chart symbols appear in parenthesis.

Explanation

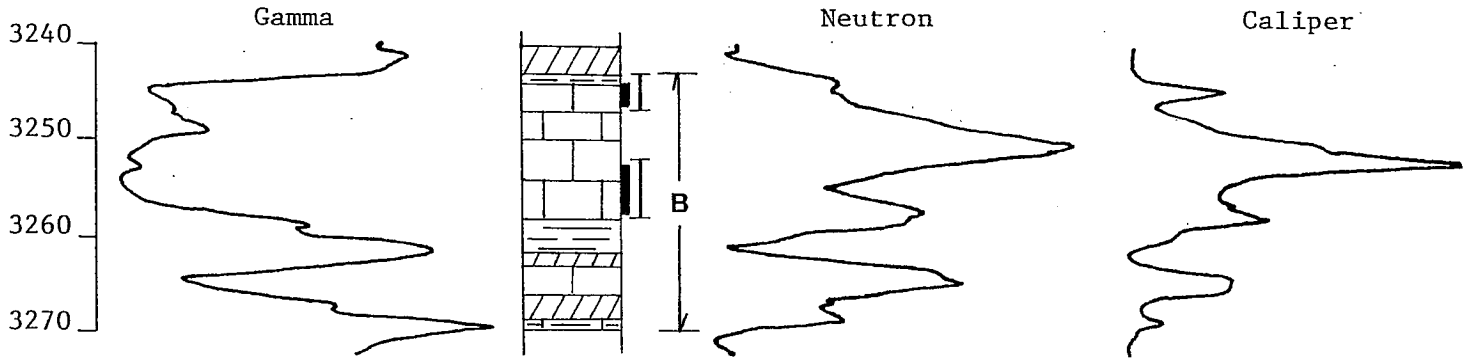


COLEMAN No. 1 KIRCHER, NENW, 3-1N-27W, el. 2578' (K.B.)*



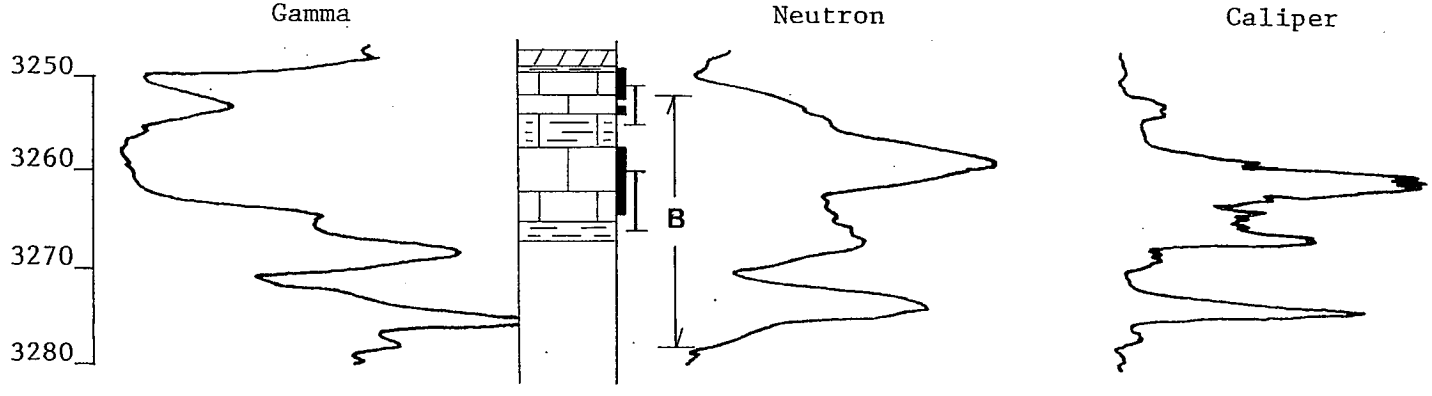
3290-90½	Shale - greenish gray (5GY6/1), clayey, calcareous, soft.
3290½-93	Limestone (mudstone) - light gray (5Y7/1), small vugs, strong oil stain, moderately porous.
3293-95	Limestone (wackestone) - light gray (5Y7/1), hard, tight, no show.
3295-99	Limestone (wackestone) - light gray (10YR) 7/1), hard, tight, no show.
3299-04	Limestone (wackestone) - light yellow brown (10YR6/4) to mostly black (2YR2/1) due to heavy oil staining, vuggy, porous, hard, pay zone.
3304-05	Limestone (wackestone) - light gray (10YR 7/1, stylolites, fractures, fossils, hard, tight, no show.
3305-06	Shale - weak red (2.5YR4/2), silty, calcareous, hard.
3306-10½	Limestone (mudstone) - greenish gray (5YG 6/1), hard, tight, no show.
3310½-13	Limestone (wackestone) - light gray (10YR 7/1), hard, tight, no show.
3313-20	Shale - weak red (2.5YR4/2), slightly silty, calcareous, hard.

EMPIRE No. 1 KIRCHER, C-SENW, 4-1N-27W, el. 2533' (K.B.)



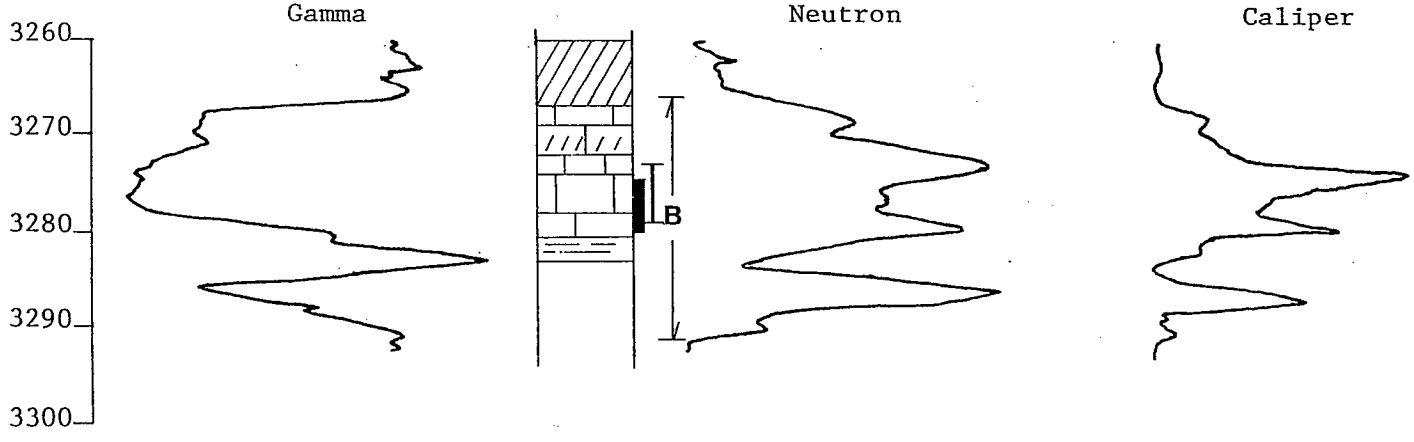
3240-43 Shale - red.
3243-44 Shale - green.
3244-46 Limestone - gray, fossiliferous fair porosity, saturated, bleeding oil.
3246-46½ Limestone - gray, dense, finely crystalline, slightly fossiliferous spotty porosity, bleeding oil from pores.
3246½-49 Limestone - gray, finely crystalline, dense, with shale streaks.
3249-53 Limestone - gray, dense, with gray shale streaks.
3253-55 Limestone - tan, fossiliferous, good vuggy porosity, saturated and bleeding oil.
3255-57½ Limestone - tan, fossiliferous, fractured, good porosity, saturated and bleeding oil.
3257½-58 Limestone - light gray, dense, finely crystalline.
3258-60½ Shale - gray-green with limestone streaks and nodules.
3260½-61½ Shale - green.
3261½-63 Shale - red with limestone streaks and nodules.
3263-66 Limestone, hard, gray, dense.
3266-68½ Shale - red with limestone streaks.
3268½-69½ Limestone - shaly.

EMPIRE No. 2 KIRCHER, C-SWNE, 4-1N-27W, el. 2539' (K.B.)*



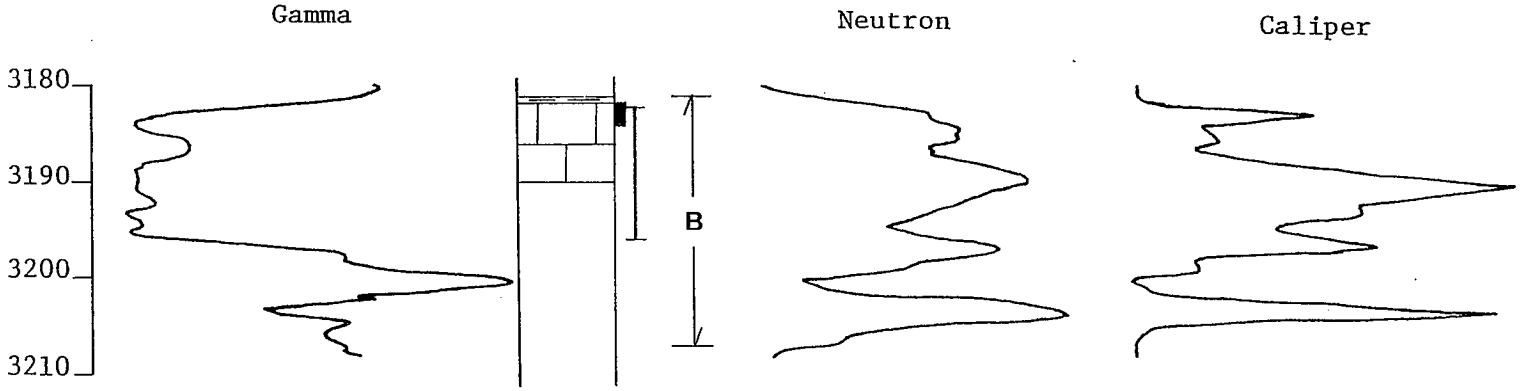
3247-49	Shale - red.
3249-49½	Shale - green.
3249½-52	Limestone - tan, finely crystalline with green shale nodules, streaks of porosity saturated and bleeding oil.
3252-53	Limestone - tan, finely crystalline with green shale streaks, no show.
3253-54	Limestone - tan, finely crystalline, fossiliferous with green shale streaks and streaks of porosity saturated and bleeding oil.
3254-57½	Limestone - gray, very finely crystalline, shaly.
3257½-64½	Limestone - tan, fossiliferous, fractured, saturated and bleeding oil.
3264½-65	Limestone - light gray, very finely crystalline, dense.
3265-67	Shale - green, very limy with limestone streaks and nodules.

EMPIRE No. 3 KIRCHER, NWNE, 4-1N-27W, el. 2552' (K.B.)*



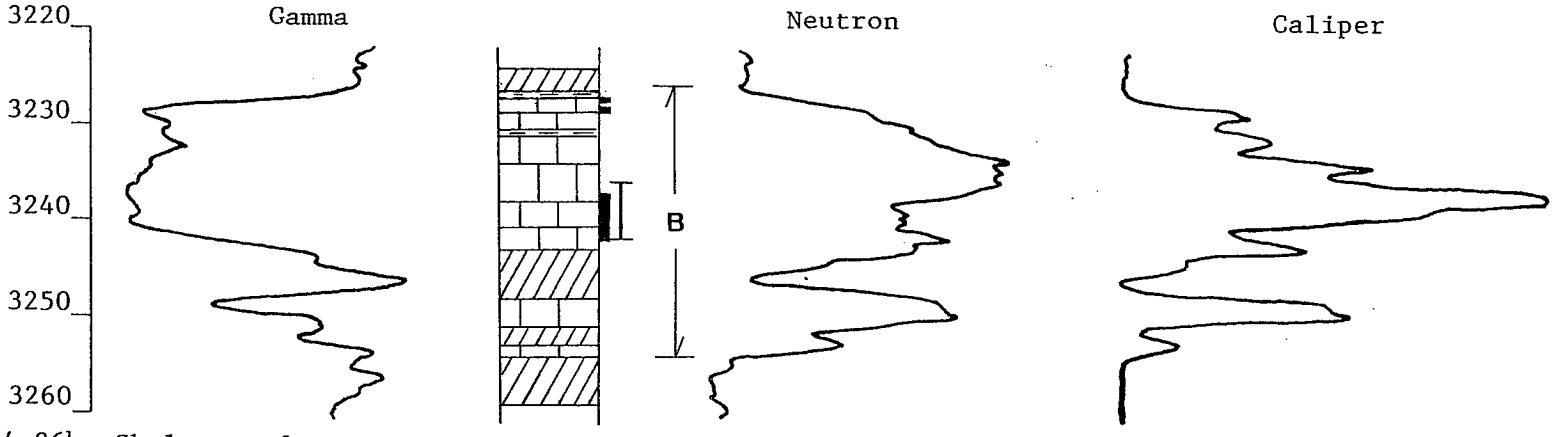
3260-67	Shale - red with four inches of green shale at bottom.
3267-69	Limestone - tan, finely crystalline, slightly fractured with green shale partings.
3269-72	Limestone with red shale.
3272-74½	Limestone - gray, dense, finely crystalline with green shale partings.
3274½-80	Limestone - tan, fossiliferous with streaks of good porosity, saturated and bleeding oil.
3280-80½	Limestone - tan, dense, finely crystalline with green shale streaks.
3280½-83	Shale - green with limestone streaks and nodules.

EMPIRE No. 3 LEIBBRANDT, C-NESW, 4-1N-27W, el. 2483' (K.B.)*



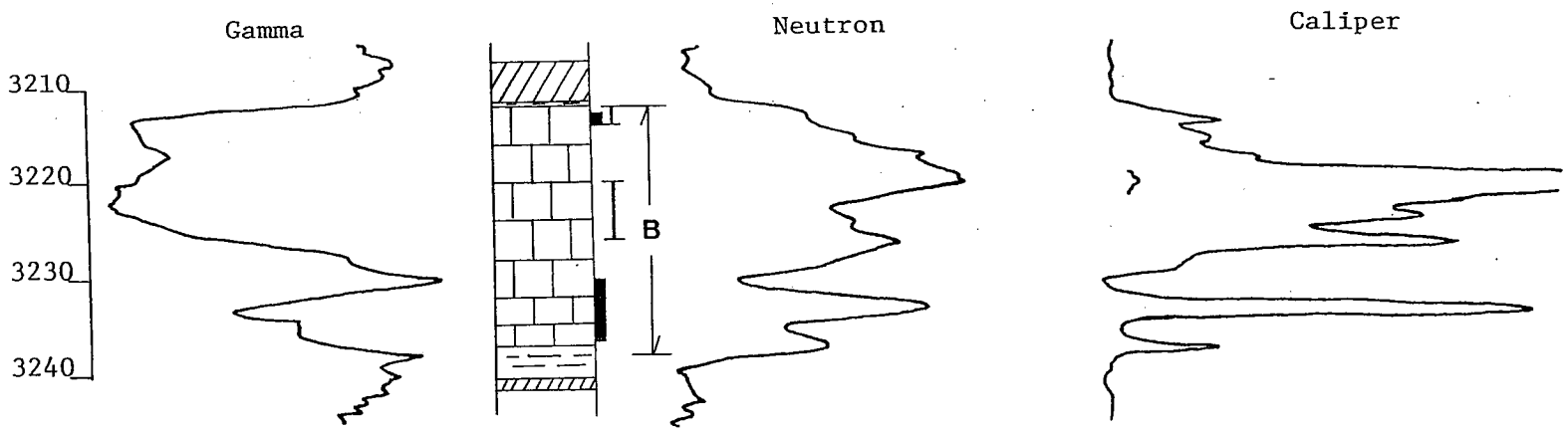
3181-81½	Shale - green.
3181½-84	Limestone - porous, fossiliferous, saturated and bleeding oil.
3184-89	Limestone - gray-green, dense, finely crystalline with numerous green shale partings.
3189-90	Limestone - hard, gray, finely crystalline with thin shale partings.

EMPIRE No. 4 LEIBBRANDT, NWSW, 4-1N-27W, el. 2523' (K.B.)



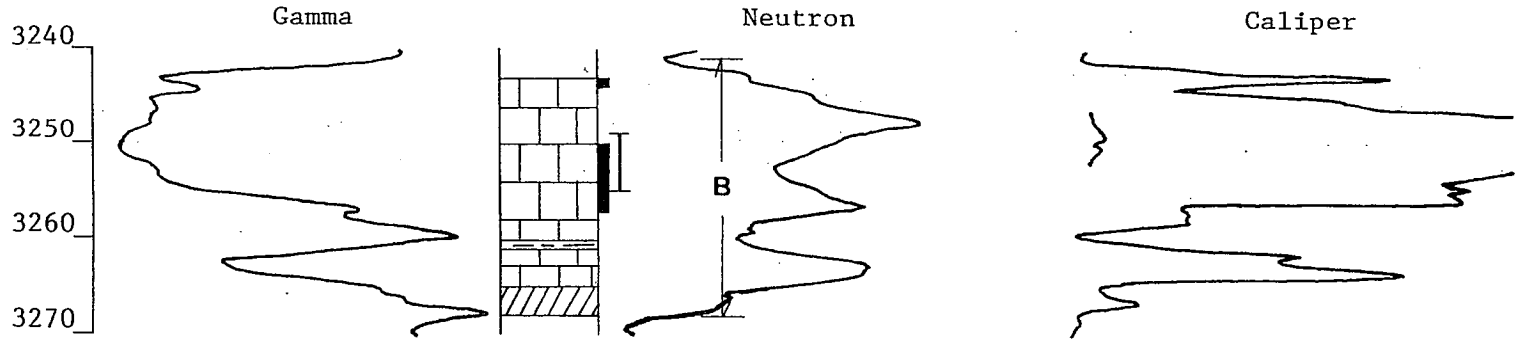
3224–26½	Shale – red.
3226½–27	Shale – green.
3227–27½	Limestone – gray, finely crystalline, slightly fossiliferous, spotty saturation, bleeding oil.
3227½–28	Limestone – gray, finely crystalline, dense, with green shale streaks.
3228–28½	Limestone – gray, finely crystalline, few vugs, saturated and bleeding.
3228½–30½	Limestone – gray, dense.
3230½–31	Shale – red and green.
3231–37	Limestone – gray, dense, with numerous shale streaks.
3237–42	Limestone – tan, finely to medium crystalline, fossiliferous, fair to good porosity, saturated and bleeding oil, few thin dense streaks.
3242–43	Limestone – cream, dense.
3243–48	Shale – limy and red.
3248–51	Limestone – cream, dense.
3251–53	Shale – red.
3253–54	Limestone – shaly.
3254–59	Shale – red.

EMPIRE No. 5 LEIBBRANDT, C-SWSE, 4-1N-27W, el. 2518' (K.B.)



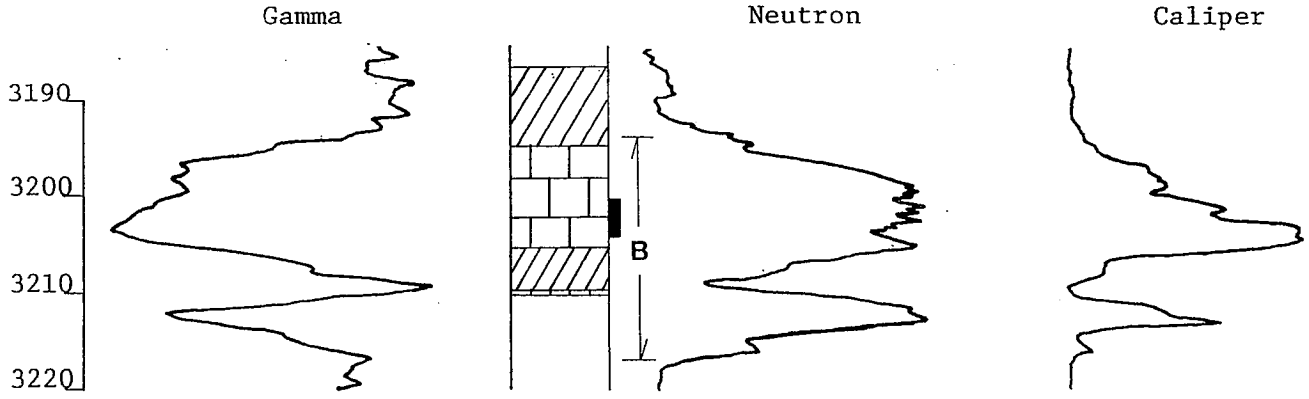
3207-11½ Shale - red.
3211½-12 Shale - green.
3212-13 Limestone - gray, very finely crystalline, dense, with few green shale streaks.
3213-14 Limestone - tan, fossiliferous, granular, good saturation, bleeding oil.
3214-15 Limestone - gray, finely crystalline, shaly.
3215-16 Limestone - gray, granular, dense, poor porosity, trace of stain.
3216-18 Limestone - gray, finely crystalline, dense, with maroon shale streaks.
3218-20 Limestone - gray, very finely crystalline, dense, with gray shale partings.
3220-26½ Limestone - gray to tan, very fossiliferous, fair vuggy porosity, saturated and bleeding oil.
3226½-27 Limestone - hard, gray, dense.
3227-30½ Shale - gray-green, limy, limestone streaks and nodules.
3230½-31½ Shale - red.

EMPIRE No. 6 LEIBBRANDT, C-NWSE, 4-1N-27W, el. 2542' (K.B.)



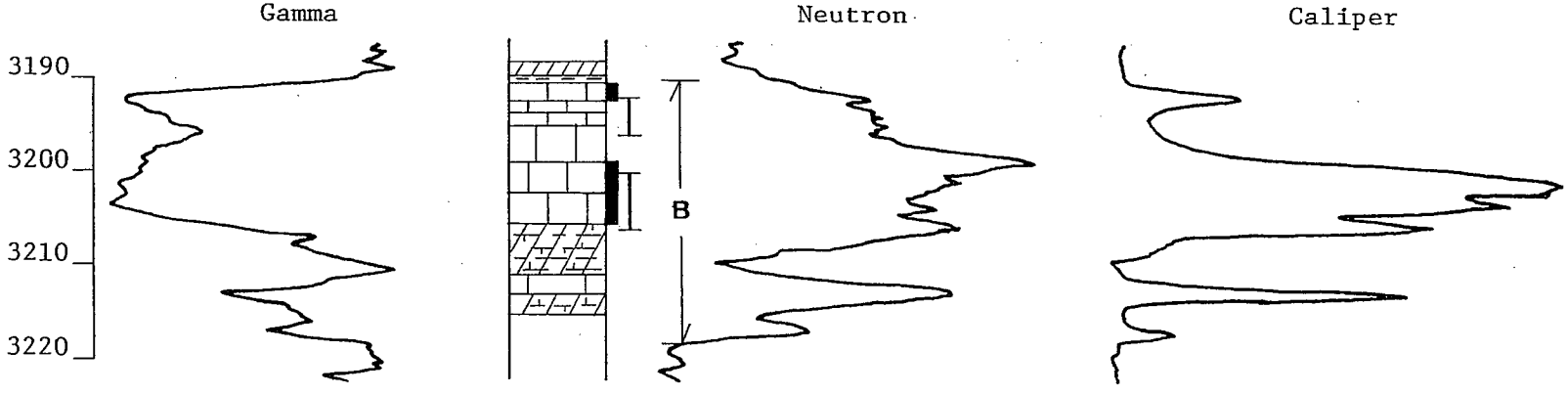
3243-44	Limestone - tan, grandular and finely crystalline, poor porosity, fair saturation, bleeding in spots.
3244-47½	Limestone - gray, very finely crystalline, dense, streaked with shale.
3247½-50	Limestone - gray, very finely crystalline, dense, with few thin shale partings.
3250-52	Limestone - gray, fossiliferous, fair porosity, saturated and bleeding oil.
3252-57	Limestone - tan, fossiliferous, fair to good vuggy porosity, saturated and bleeding oil.
3257-57½	Limestone - gray, very finely crystalline, dense, no stain.
3257½-60	Limestone - gray, very finely crystalline, shaly.
3260-61	Shale - red and green.
3261-62	Limestone - gray, finely crystalline, dense, with green shale streaks.
3262-65	Limestone - cream, very finely crystalline, dense.
3265-68	Shale - red.
3268-68½	Shale - gray, green, limy.

EMPIRE No. 7 LEIBBRANDT, C-SENE, 4-1N-27W, el. 2484' (K.B.)



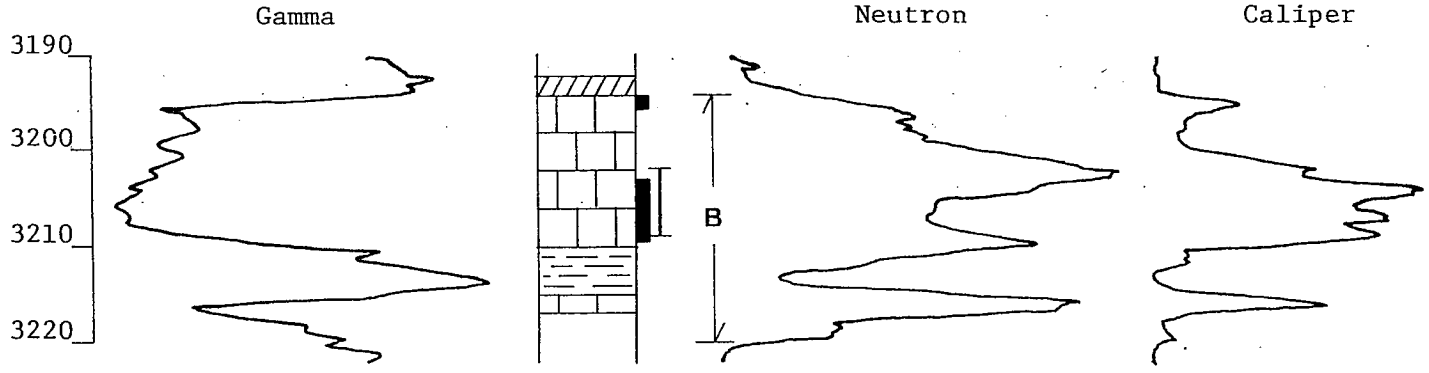
3186-94½	Shale - red, 4 inches of green shale at base.
3194½-3201½	Limestone - gray, very finely crystalline, broken and filled with red and green shale.
3201½-04	Limestone - tan, finely crystalline, partly fossiliferous, with shale nodules, streaks of porosity, saturated and bleeding oil.
3204-05	Limestone - gray, very finely crystalline, dense.
3205-08	Shale - red and green, with limestone streaks and nodules.
3208-09½	Shale - green and red.
3209½-10	Limestone - gray to tan, very finely crystalline, dense.

EMPIRE No. B-1 REMINGTON, C-SESE, 4-1N-27W, el. 2493' (K.B.)



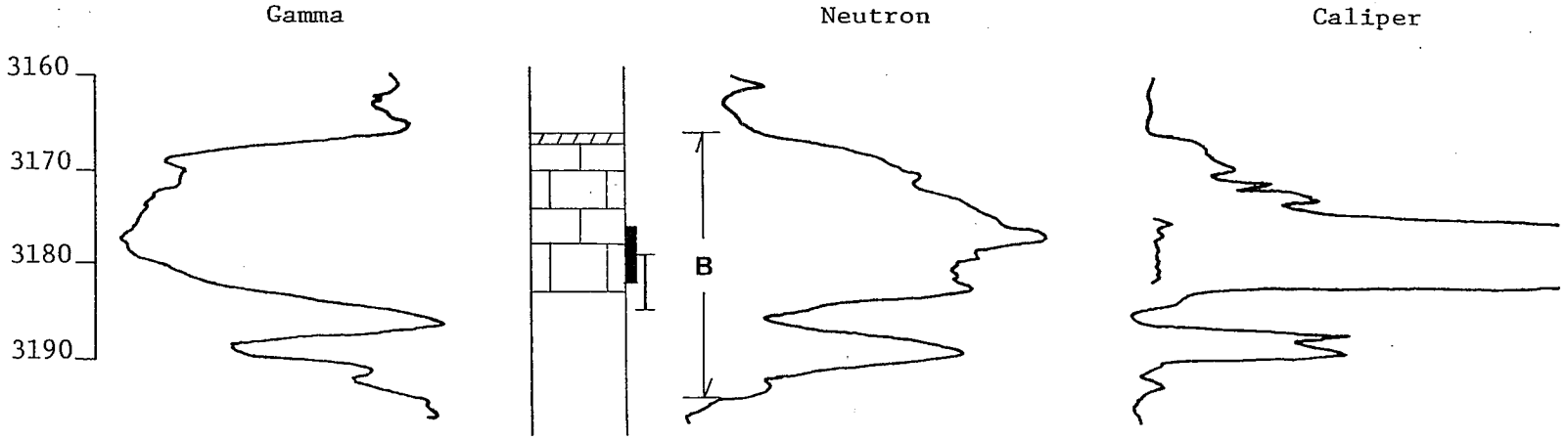
3188-89½ Shale - red, with six inches of green shale.
3189½-90½ Limestone - gray, dense, with shale streaks.
3190½-92½ Limestone - gray, finely crystalline, spotty porosity, saturated and bleeding oil.
3192½-93½ Limestone - gray, shaly.
3193½-95 Limestone - gray, dense, fossiliferous, few vugs, no stain.
3195-99 Limestone - gray, finely crystalline, dense, with shaly streaks.
3199-3205 Limestone - tan, fossiliferous, fair porosity, saturated and bleeding oil, few hairline vertical fractures.
3205-05½ Limestone - gray, dense.
3205½-11 Shale - red and green, limy.
3211-13 Limestone - gray, dense, very finely crystalline.
3213-15 Shale - red, limy.

EMPIRE No. B-2 REMINGTON, NESE, 4-1N-27W, el. 2492' (K.B.)



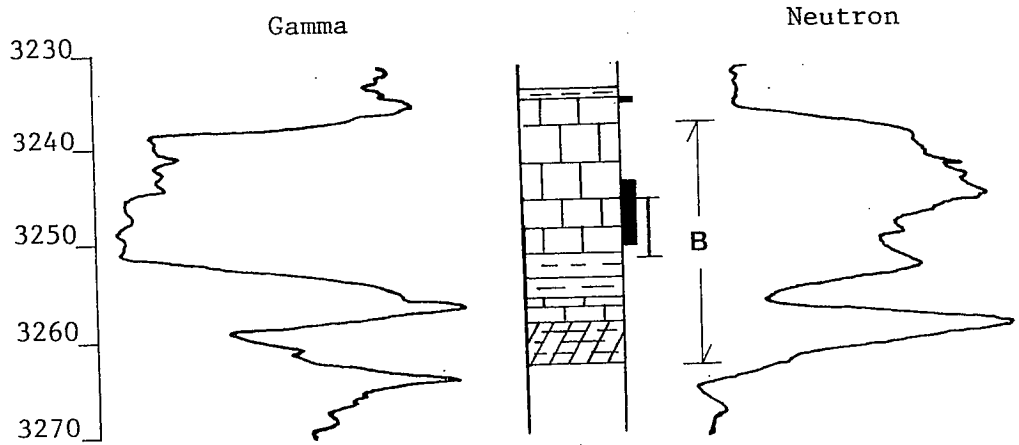
3192-94	Shale - red, with three inches of green shale.
3194-95½	Limestone - tan, finely crystalline, fair porosity, saturated and bleeding oil.
3195½-98	Limestone - tan, finely crystalline, dense, with thin streaks of shale.
3198-99	Limestone - tan, finely crystalline, slight porosity in bottom two inches with a trace of oil.
3199-3201	Limestone - gray, very shaly.
3201-03	Limestone - gray, dense.
3203-09½	Limestone - tan, fossiliferous, fair to good porosity, saturated and bleeding oil.
3209½-10	Limestone - gray, very finely crystalline, dense.
3210-15	Shale - gray-green, limy.
3215-17	Limestone - tan, dense, very finely crystalline.

EMPIRE No. B-1 HENTON, C-NESE, 8-1N-27W, el. 2464' (K.B.)



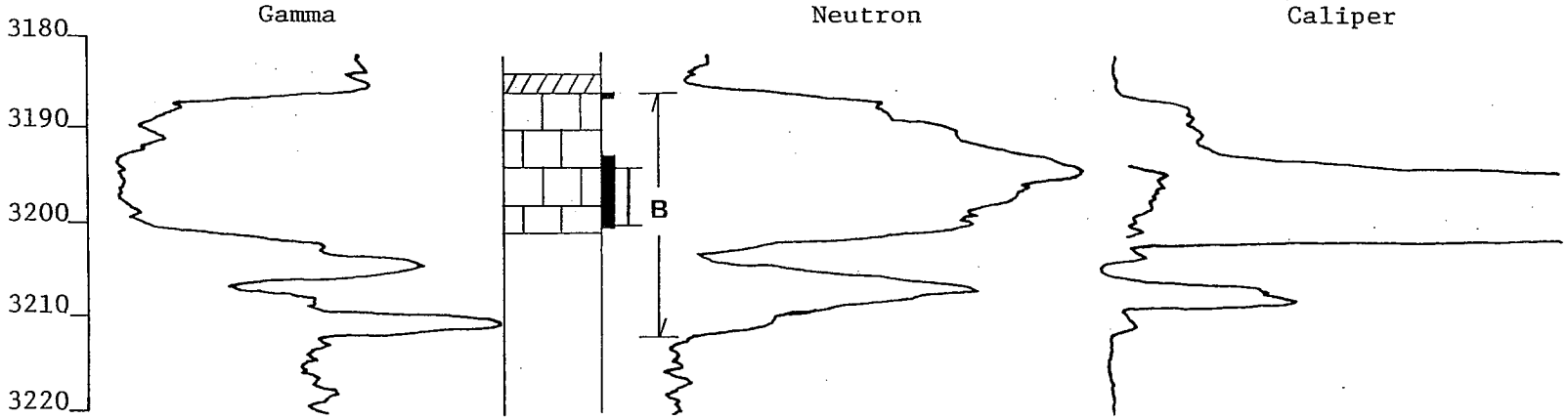
3166-67	Shale - red with three inches of green shale.
3167-72	Limestone - gray to tan, finely crystalline, numerous thin shaly streaks.
3172-73	Limestone - gray, finely crystalline, dense with thick shale streaks.
3173-76	Limestone - gray, finely crystalline, dense with numerous thin shale partings.
3176-78	Limestone - white to light gray, finely crystalline, dense, fractured, bleeding oil from fractures and few vugs.
3178-82	Limestone - light gray to tan, fossiliferous, fair vuggy porosity, fractured, saturated and bleeding oil.
3182-83	Limestone - light gray, very dense, finely crystalline.
3183-87	Shale - dark gray-green.
3187-90	Limestone - tan, dense, very finely crystalline.
3190-91	Limestone - gray-green, shaly.

EMPIRE No. 1 HENTON, NESW, 9-1N-27W, el. 2493' (K.B.)



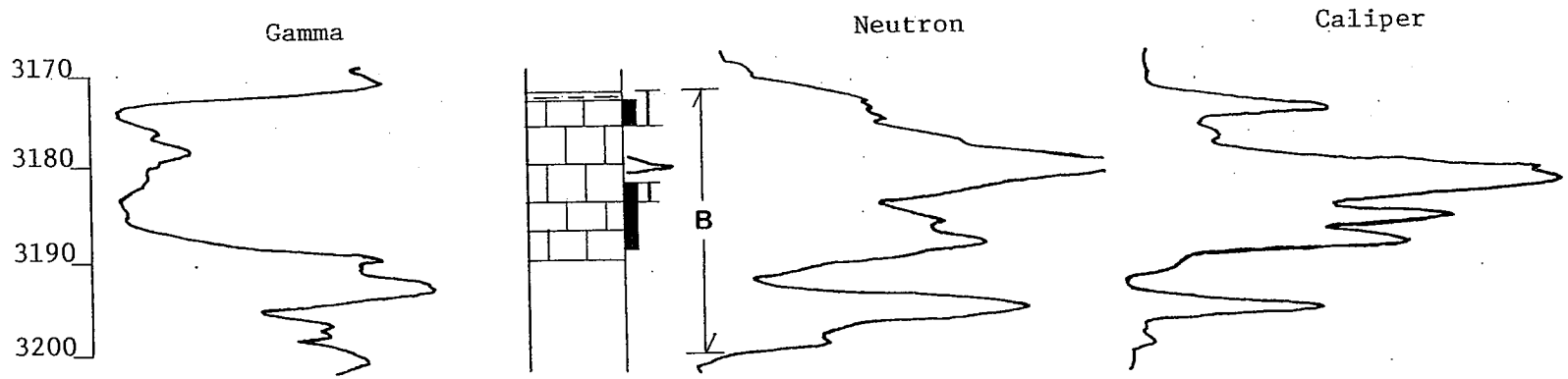
3234-35	Shale - six inches red, six inches green.
3235-37	Limestone - gray, fossiliferous, dense, with green and red shale partings, top two inches porous, saturated and bleeding oil.
3237-43	Limestone - shaly.
3243-44	Limestone - gray, finely crystalline, dense, with numerous thin green shale partings.
3244-51	Limestone - gray, fossiliferous, fair to good porosity, saturated, bleeding oil, some vertical fractures.
3251-51½	Limestone - hard, gray, dense, very finely crystalline.
3251½-54	Shale - gray-green, limy.
3254-56	Shale - red and green.
3256-58½	Limestone - hard, gray, dense, with few thin shale partings.
3258½-63	Shale - red and green, with limestone streaks and nodules.

EMPIRE No. 2 HENTON, C-NWSW, 9-1N-27W, el. 2490' (K.B.)



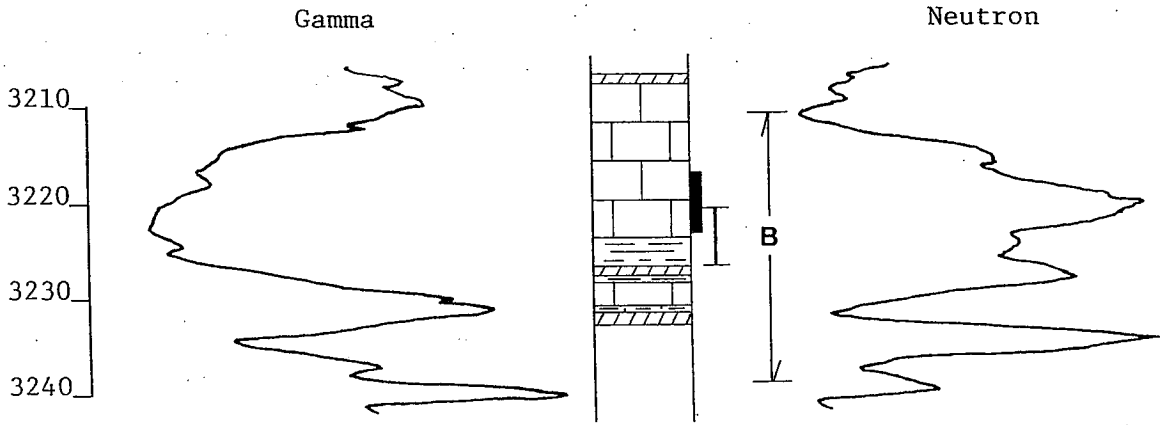
3184-86	Shale - red with four inches of green shale at bottom.
3186-86½	Limestone - gray, fossiliferous, poor porosity, spotty saturation, bleeding oil.
3186½-89	Limestone - gray, fossiliferous, finely crystalline, with numerous shale streaks, no show.
3189-90	Limestone - gray, finely crystalline, very dense.
3190-93	Limestone - gray, finely crystalline, very shaly.
3193-95	Limestone - gray, finely crystalline, partly fossiliferous, streaks of porosity, saturated and bleeding oil.
3195-3200½	Limestone - tan, fossiliferous, poor to fair vuggy porosity, saturated and bleeding oil.
3200½-01	Limestone - gray-green, shaly, no show.

EMPIRE No. 1 McBRIDE, NWNE, 9-1N-27W, el. 2480' (K.B.)



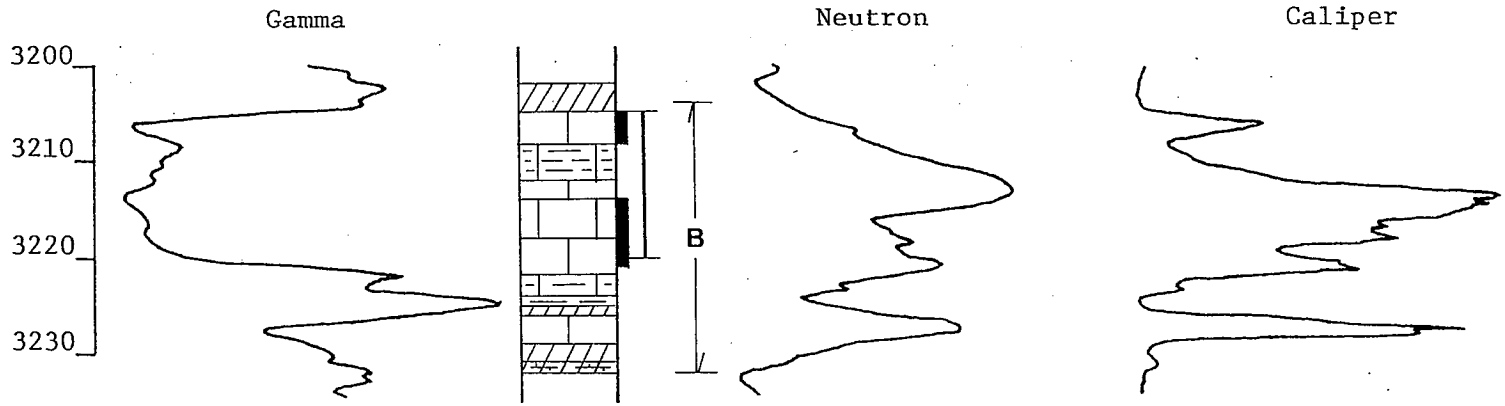
3172-73	Shale - green, with limestone nodules.
3173-76	Limestone - tan, finely crystalline, fossiliferous, partly fractured, saturated and bleeding oil.
3176-79	Limestone - gray, dense, finely crystalline, with green shale partings.
3179-82	Limestone - gray, dense, finely crystalline, with green shale streaks.
3182-89	Limestone - tan, finely crystalline, fossiliferous, partly fractured, saturated and bleeding oil, four inches of chert at base.
3189-90	Limestone - gray-green, very dense, with green shale streaks.

EMPIRE No. 3 McBRIDE, C-SWNE, 9-1N-27W, el. 2496' (K.B.)



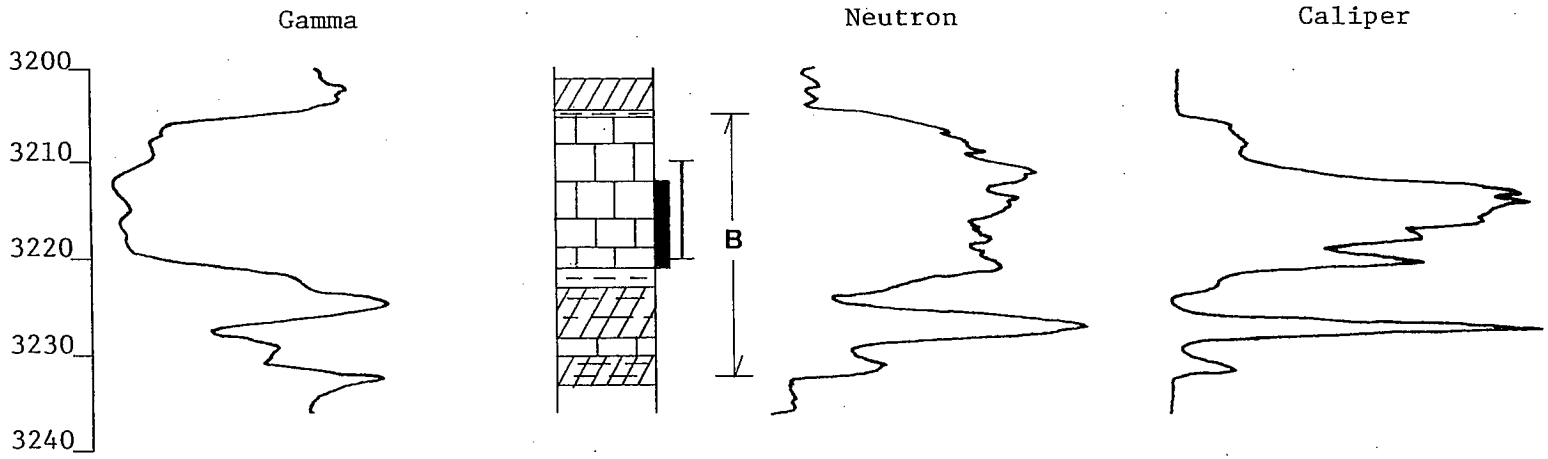
3207-08	Shale - red with three inches of green shale at base.
3208-13½	Limestone - gray, dense, finely crystalline with red shale streaks and partings.
3213½-17	Limestone - gray, finely crystalline, dense with green shale streaks.
3217-23½	Limestone - tan, fossiliferous, poor to fair porosity, saturated and bleeding oil.
3223½-24	Limestone - light gray, very finely crystalline, dense.
3224-27	Shale - green with limestone nodules.
3227-28	Shale - red.
3228-28½	Shale - green.
3228½-31	Limestone - light gray, very finely crystalline with a few green shale streaks.
3231-31½	Shale - gray, limy.
3231½-33	Shale - red.

EMPIRE No. 3 REMINGTON, C-NENW, 9-1N-27W, el. 2512' (K.B.)



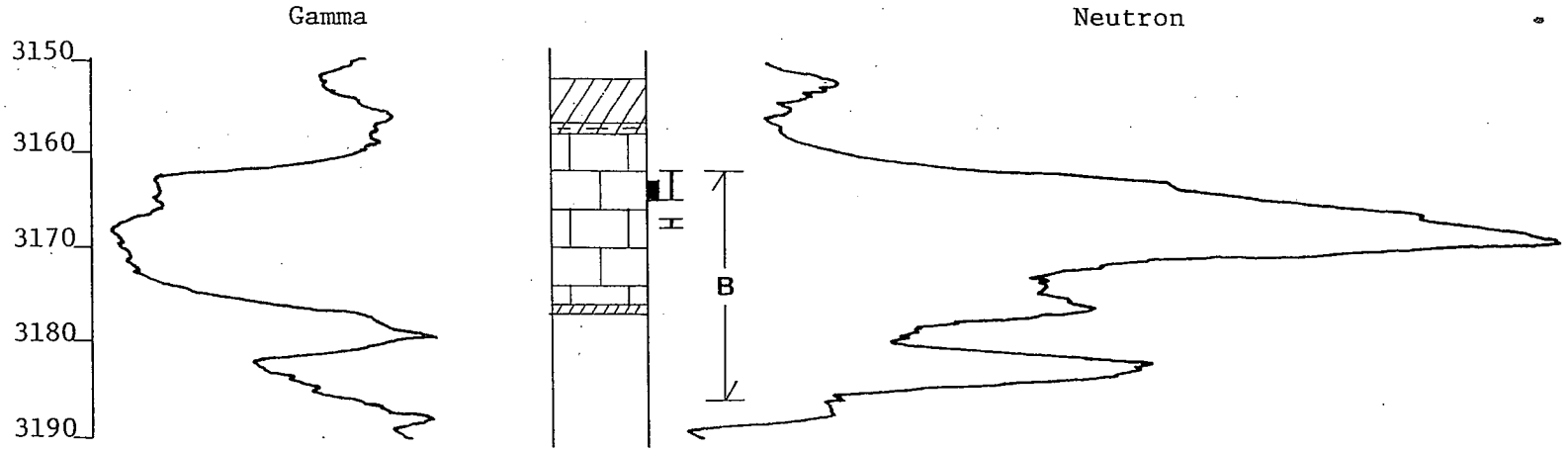
3202-05	Shale - red with six inches of green shale on bottom.
3205-07½	Limestone - granular, very fossiliferous, good porosity, saturated and bleeding oil.
3207-08½	Limestone - gray, finely crystalline, fossiliferous, spotted porosity and saturation, some green shale in vugs and streaks.
3208½-12	Limestone - red, very shaly.
3212-14	Limestone - gray, very finely crystalline, dense with green shale partings.
3214-21	Limestone - white to light gray, medium crystalline, fossiliferous, fair to good porosity, saturated and bleeding oil.
3221-21½	Limestone - light gray, finely crystalline, dense.
3221½-24	Limestone - gray, dense, very shaly.
3224-25	Shale - gray-green.
3225-26	Shale - red with limestone nodules.
3226-29	Limestone - gray, dense, very finely crystalline with green shale.
3229-31	Shale - red.
3231-32	Shale - red and green, limy.

EMPIRE No. 4 REMINGTON, SENW, 9-1N-27W, el. 2508' (K.B.)



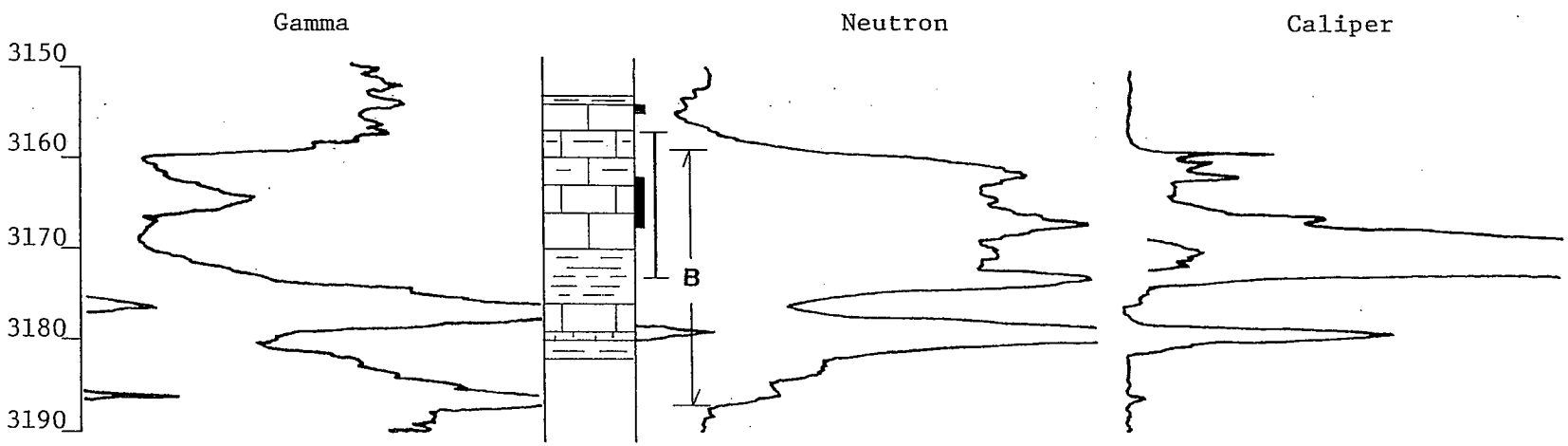
3201-04½	Shale - red.
3204½-05	Shale - green.
3205-12	Limestone - gray, finely crystalline, with streaks of red and green shale.
3212-14	Limestone - gray, fossiliferous, finely crystalline, streaks of good vuggy porosity, saturated and bleeding.
3214-21	Limestone - gray, fossiliferous, fair to good vuggy porosity, saturated and bleeding oil.
3221-23	Shale - gray-green, limy.
3223-28	Shale - variegated, red and green.
3228-30	Limestone - gray, very dense, finely crystalline with few shale partings.
3230-33	Shale - red and green, limy.

MURFIN No. B-2 MESSNER, C-SESW, 10-1N-27W, el. 2436' (K.B.)



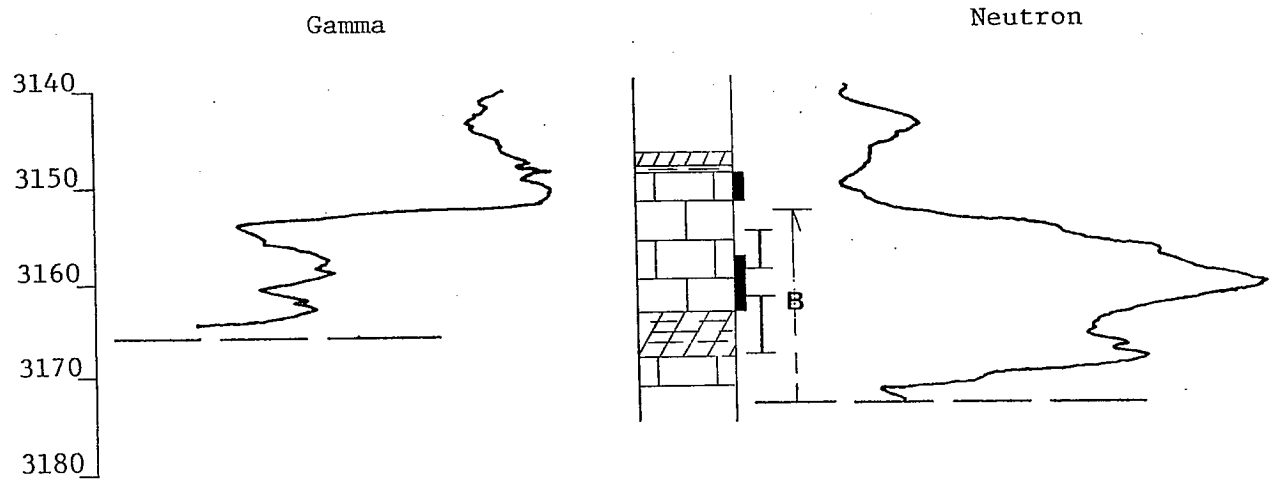
3152-57	Shale - red.
3157-58	Shale - red and gray.
3158-59	Limestone - gray, dense.
3159-59½	Limestone - gray, porous.
3159½-60½	Same - dense.
3160½-61	Same - porous.
3161-62	Same - dense.
3162-63	Same with gray shale.
3163-64	Same with porous streaks bleeding oil.
3164-65	Same with five feet of good porous bleeding oil.
3165-66	Limestone - gray, dense.
3166-72	Same with fossils.
3172-76	Limestone - gray, dense.
3176-77	Shale - red.

FARMER No. 3 NICHOLSON, C-NENE, 14-1N-27W, el. 2427' (K.B.)



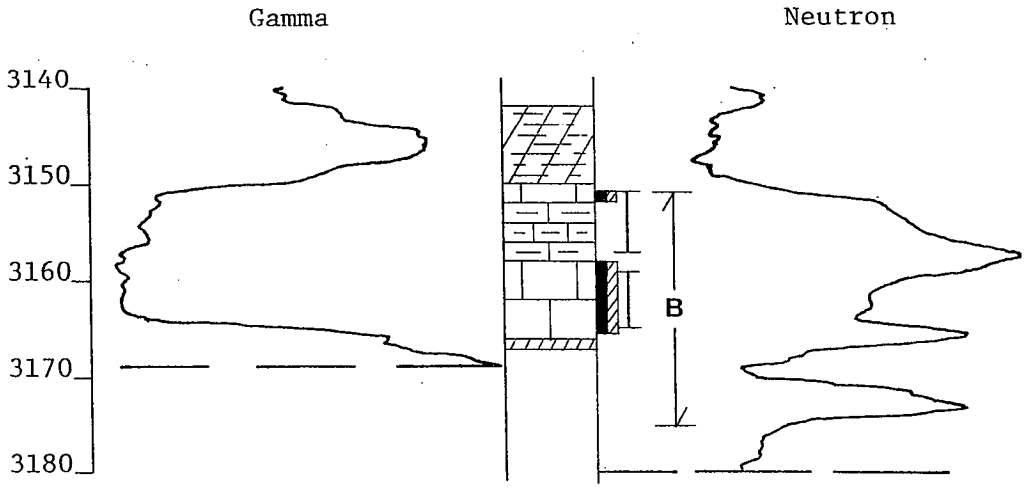
3153-54	Shale
3154-55	Limestone - white, gray, finely crystalline, bleeding oil.
3155-57	Limestone - white, gray, finely crystalline, no show.
3157-62	Limestone - very shaly.
3162-63	Limestone - slightly shaly with trace of bleeding oil.
3163-67½	Limestone - white, crystalline, slightly fossiliferous bleeding oil, poor porosity, good saturation.
3167½-70	Limestone - white, dense, crystalline, no show.
3170-76	Shale.
3176-79	Limestone - gray, dense, finely crystalline, no show.
3179-80	Shale - limy.
3180-82	Shale.

EMPIRE No. 1 SPRINGER, C-NWNW, 14-1N-27W, el. 2426' (K.B.)



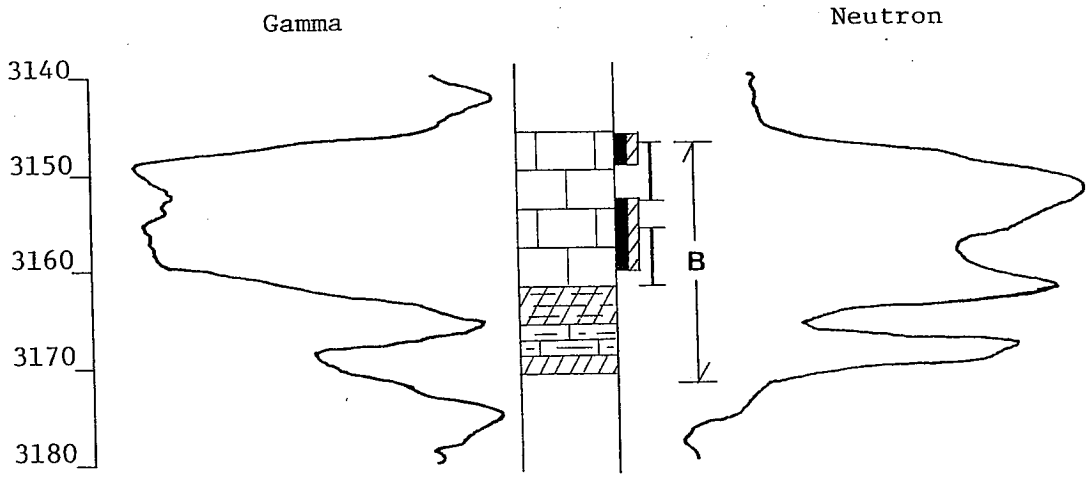
3147-48½ Shale - red.
3148½-49 Shale - green.
3149-52 Limestone - tan, granular, medium crystalline, fair porosity, saturated and bleeding oil.
3152-57½ Limestone - gray, finely crystalline, dense, with red and green shale streaks.
3157½-63 Limestone - tan, fossiliferous, fair to good porosity, trace of vertical fracturing, all saturated and bleeding oil.
3163-68½ Shale - red and green.
3168½-71½ Limestone - tan, dense, very finely crystalline with a few shale partings.

EMPIRE No. 3 SPRINGER, NENW, 14-1N-27W, el 2426' (K.B.)



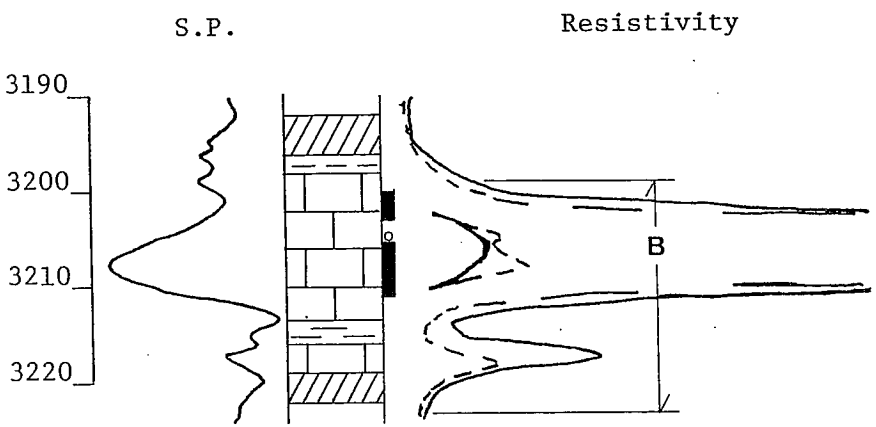
3142-50	Shale - red, green.
3150-51	Limestone - finely crystalline, dense.
3151-52	Limestone - finely crystalline, fossiliferous, spotted, fair vuggy porosity, bleeding oil and gas.
3152-58	Limestone - finely crystalline, dense, shaly.
3158-65½	Limestone - finely crystalline, fossiliferous, good vuggy and fair fractured porosity, bleeding oil and gas.
3165½-66	Limestone - finely crystalline, dense.
3166-67	Shale - red.

EMPIRE No. 4 SPRINGER, C-SENW, 14-1N-27W, el. 2420' (K.B.)



3146-46½ Limestone - finely crystalline, dense.
3146½-49½ Limestone - finely crystalline, fossiliferous, good vuggy and fair fractured porosity, bleeding oil and gas.
3149½-53 Limestone - finely crystalline, fossiliferous, dense, few shale partings.
3153-60½ Limestone - medium crystalline, fossiliferous, fair vuggy and gractured porosity, bleeding oil and gas.
3160½-62 Limestone - dense, green shale partings.
3162-66 Shale - red and green.
3166-69 Limestone - finely crystalline, shaly.
3169-71 Shale - red.

FRONTIER No. 1 POOLE, C-SWSW, 14-1N-27W, el. 2480' (K.B.)



3192-96	Shale - red to maroon, silky, green toward the base.
3196-98½	Shale - pale green, silky to subwaxy, some limestone inclusions.
3198½-00	Limestone - light gray, crystalline, dense, tight, no show, interbeds of green, limy shale.
3200-03	Limestone - light gray, finely crystalline, dense, reworked appearance, inclusions of limy shale, bleeding oil associated with hairline fractures, some pyrite inclusions.
3203-04	Limestone - as above, no oil stains.
3204-05	Limestone - as above, with abundant hairline fractures, mostly filled with calcite, remainder associated with oil stains.
3205-09	Limestone - light gray, very finely crystalline, abundant hairline fractures, vugs and pinpoint vugs, all with heavy bleeding oil, permeability poor.
3209-10	Limestone - dense, light gray, with inclusions of green shale, some matrix porosity and hairline fractures associated with bleeding oil, abundant stylolites.

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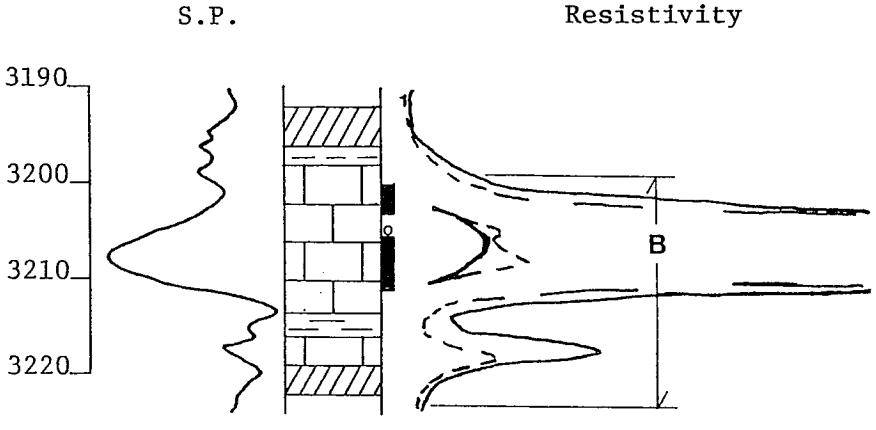

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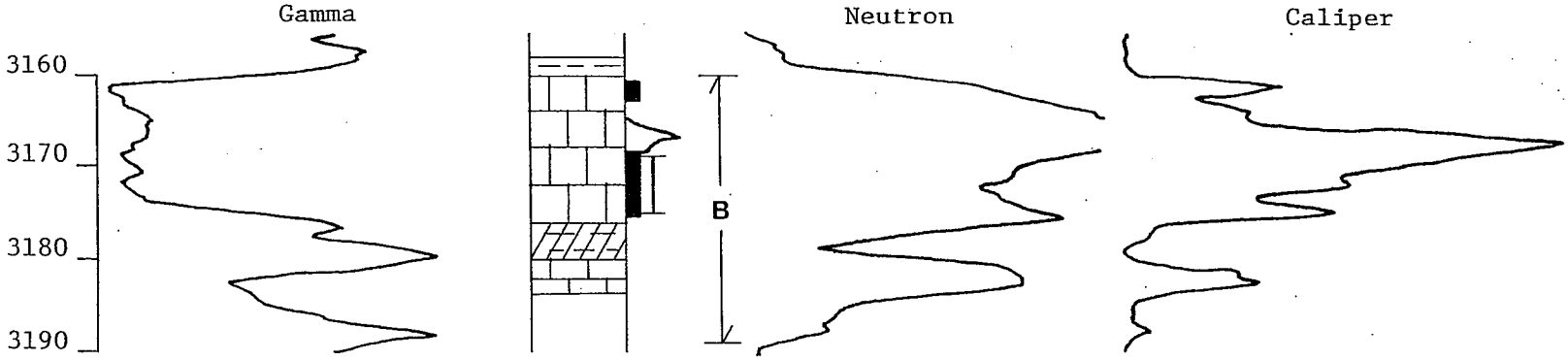
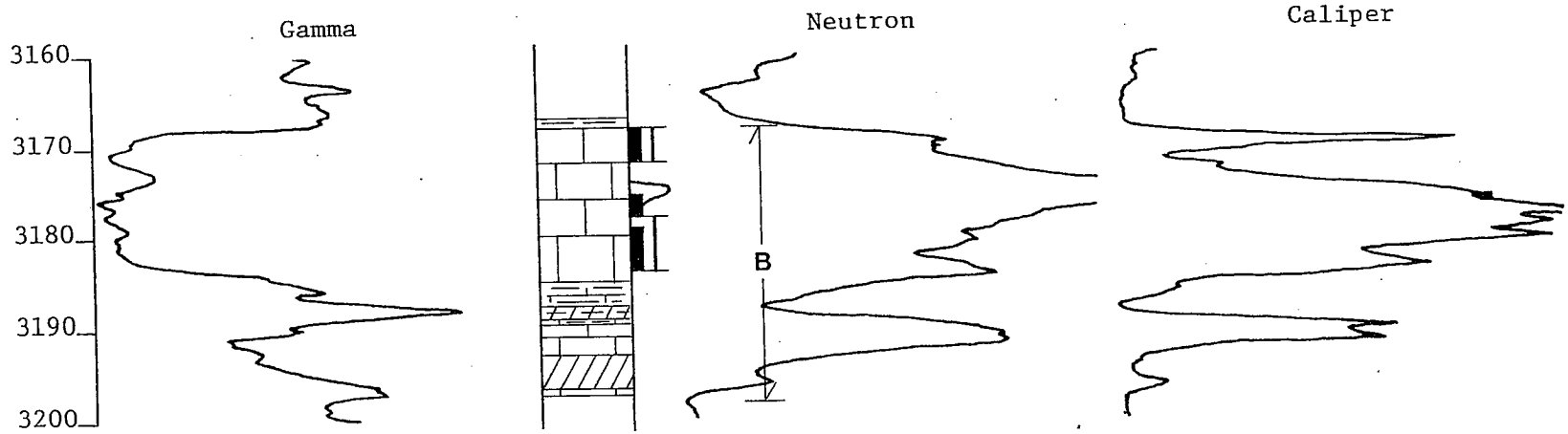
3210-11	Limestone - light gray, dense, bleeding oil in hairline fractures, some fractures filled with calcite.
3211-13½	Limestone - gray, crystalline, tight, no show, interbedded with gray-green, hard, dense, limy, pyritic shale.
3213½-15	Shale - olive green, silky, fissile.
3215-16	Shale - gray-green, hard, dense, limy, silky, abundant ostracods and fusilinids.
3216-19	Limestone - light tan-gray, finely crystalline, dense, hard, tight, no show, slightly fossiliferous,
3219-22	Shale - mostly maroon, some green spots and laminations, silky.

EMPIRE No. 1 NICHOLSON, C-SWNE, 15-1N-27W, el. 2432' (K.B.)



3158-58 3/4	Shale - red.
3158 3/4-60	Shale - green.
3160-60½	Limestone - gray, dense, granular.
3160½-63	Limestone - gray, granular, fair porosity, saturated and bleeding oil.
3163-67	Limestone - light tan, very finely crystalline, with numerous green shale partings.
3167-68	Limestone - light gray, very finely crystalline, dense.
3168-75½	Limestone - tan, finely crystalline, partly fossiliferous, fair porosity, saturated and bleeding oil.
3175½-76	Limestone - cream, very finely crystalline, dense.
3176-80	Shale - gray-green and red, with limestone streaks and nodules.
3180-83½	Limestone - tan, dense, finely crystalline.

EMPIRE No. 3 NICHOLSON, C-SENW, 14-1N-27W, el. 2438' (K.B.)



3167-68	Shale - green.
3168-69	Limestone - light gray, finely crystalline, dense with a few vugs spotted with oil.
3169-71	Limestone - tan, fossiliferous, granular, fair porosity, saturated and bleeding oil.
3171-72	Limestone - light gray, very finely crystalline, dense.
3172-75½	Limestone - light gray, very finely crystalline with numerous shale streaks and partings.
3175½-78	Limestone - tan, fossiliferous, good vuggy porosity, few fractures, saturated and bleeding oil.
3178-79	Limestone - light gray, finely crystalline, dense.
3179-84	Limestone - light tan, very fossiliferous, partly fractured, saturated and bleeding oil.
3184-85	Limestone - light gray, finely crystalline, dense.

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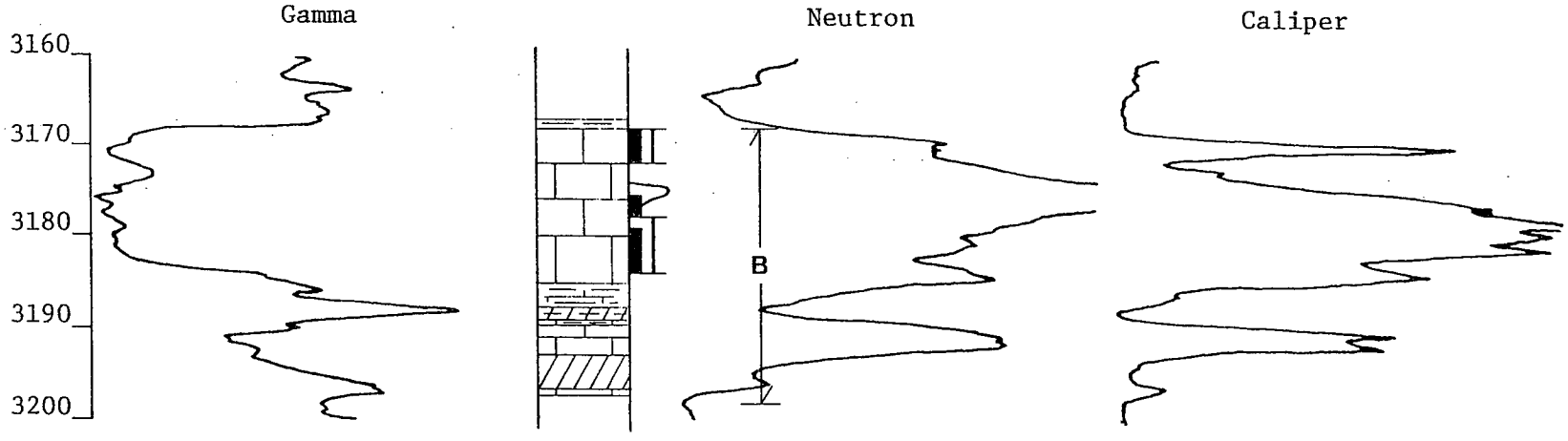

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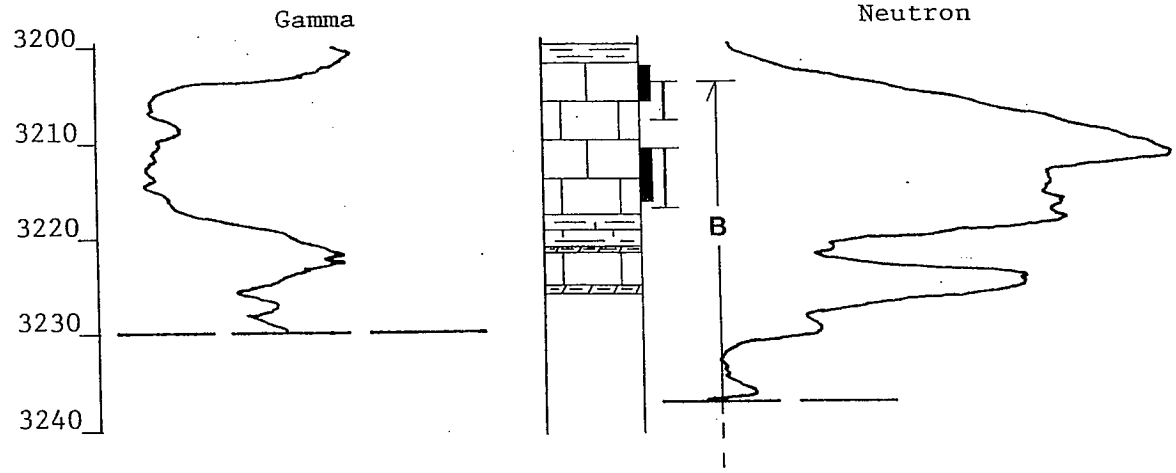
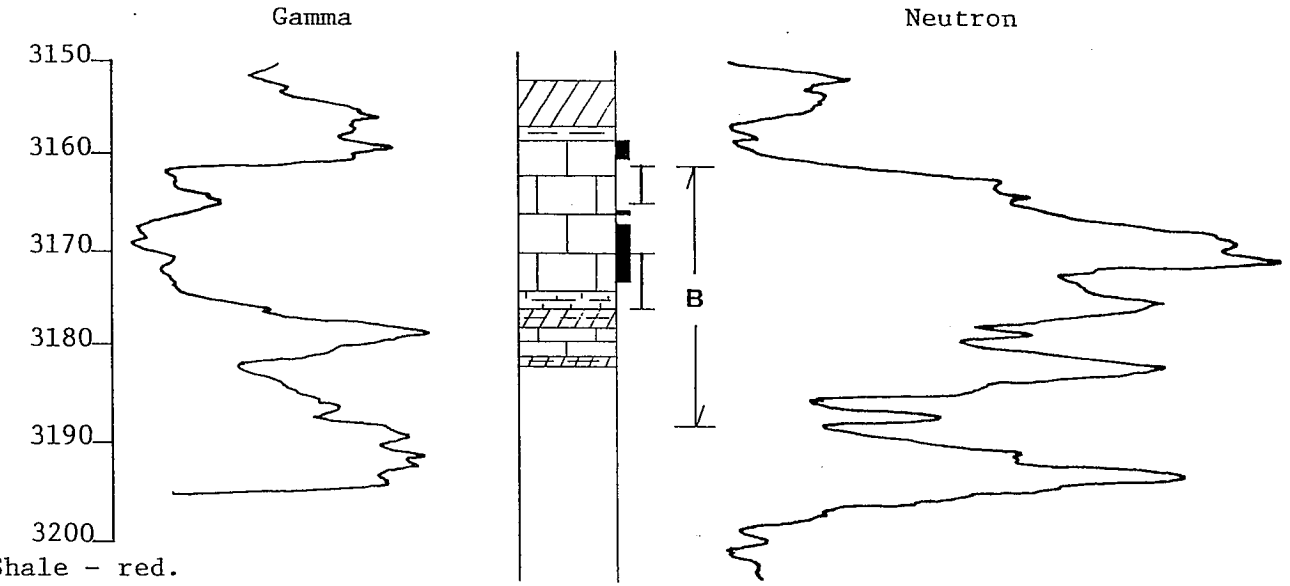
3185-87½	Shale - gray-green, limy, fossils and limestone nodules, major vertical fractures from 3184½ to 3187.
3187½-89	Shale - red and green.
3189-89½	Limestone - green, shaly.
3189½-92	Limestone - light tan, very finely crystalline, dense.
3192-93	Limestone - gray, shaly.
3193-96½	Shale - dark red.
3196½-97	Limestone - gray, dense, medium crystalline.

EMPIRE No. 4 NICHOLSON, C-SWNW, 15-1N-27W, el. 2478' (K.B.)



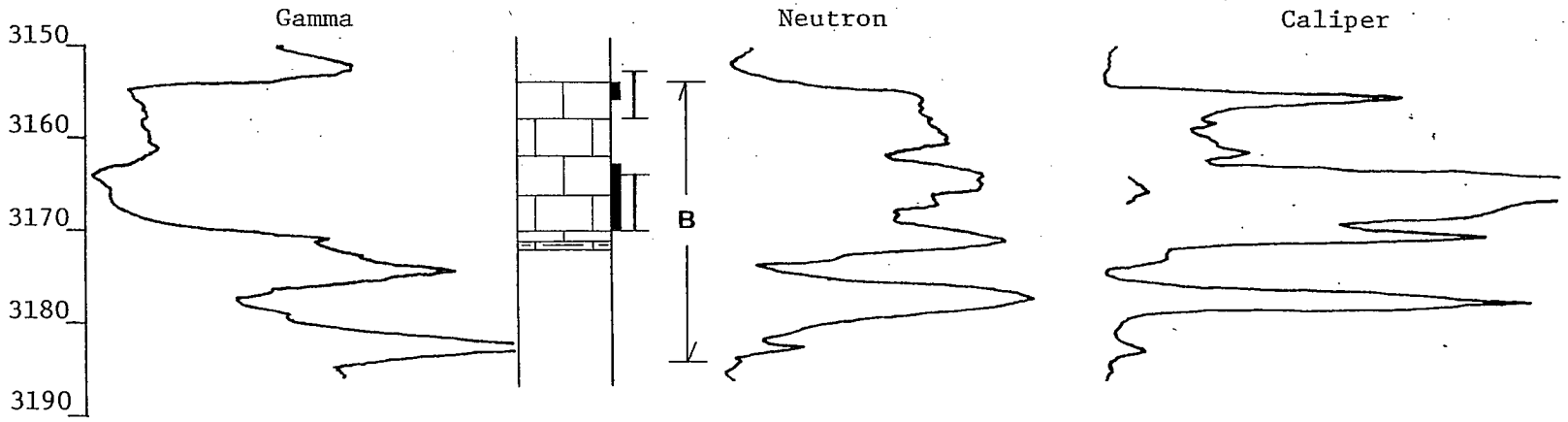
3200-02 Shale - green.
3202-02½ Limestone - tan, finely crystalline, dense.
3202½-04½ Limestone - tan, finely crystalline, fossiliferous, fair porosity, saturated and bleeding oil.
3204½-06 Limestone - gray, finely crystalline, fossiliferous, dense, few streaks of porosity, bleeding oil in spots.
3206-11 Limestone - gray, finely crystalline, dense, green shale streaks and partings.
3211-16 Limestone - gray to tan, finely crystalline, fossiliferous, streaks of fair porosity, saturated and bleeding oil.
3216-16½ Limestone - gray to tan, finely crystalline, poor spotted porosity, spots of free oil.
3216½-17½ Limestone - light gray, very finely crystalline.
3217½-21 Shale - gray-green, limy.
3221-21½ Shale - red and green.
3221½-25 Limestone - gray, dense, finely crystalline, few green shale partings.
3225-26 Shale - red and green.

EMPIRE No. 2 PARKER, C-NWNW, 15-1N-27W, el. 2433' (K.B.)



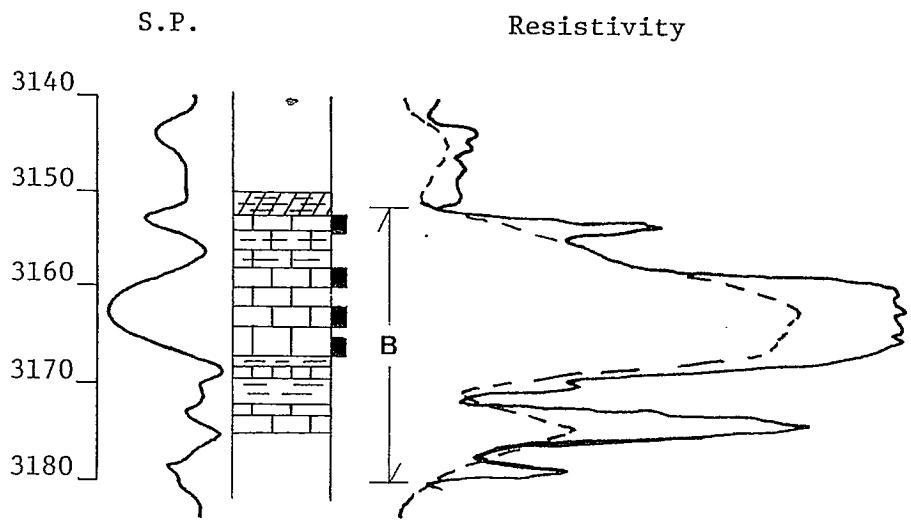
3152-57 Shale - red.
3157-58½ Shale - green.
3158½-60½ Limestone - tan, fossiliferous, good porosity, saturated and bleeding oil.
3160½-61½ Limestone - gray, dense, finely crystalline.
3161½-65½ Limestone - gray, dense, finely crystalline, gray shale sreaks.
3165½-66 Limestone - gray, finely crystalline, poor spotted porosity, bleeding oil.
3166-67 Limestone - gray, finely crystalline, with shale partings.
3167-73 Limestone - tan, fossiliferous, porous vertical fractures saturated and bleeding oil.
3173-74 Limestone - tan, dense, finely crystalline.
3174-76 Shale - gray-green, limy with limestone streaks and nodules.
3176-78 Shale - gray and red.
3178-81 Limestone - gray, dense, finely crystalline.
3181-82 Shale - red and gray.

EMPIRE No. 1 TOWNLEY, C-NWNE, 15-1N-27W, el. 2431' (K.B.)



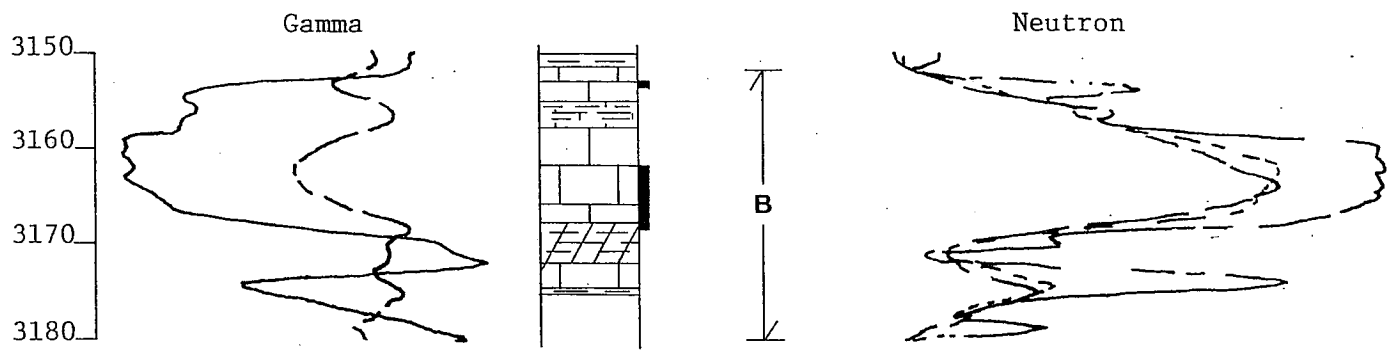
3154-56	Limestone - finely crystalline, fossiliferous, gray, with fair porosity, saturated and bleeding oil, few shale streaks.
3156-63	Limestone - gray, finely crystalline, dense, numerous shale streaks.
3163-64	Limestone - white to light gray, finely crystalline with spotted stain.
3164-70	Limestone - tan to gray, finely crystalline, partly fossiliferous, good vertical fractures, streaks of porosity, saturated and bleeding oil.
3170-71	Limestone - white to light gray, dense.
3171-72	Limestone - gray, dense, very shaly.

EMPIRE No. 1-2 DANBURY, C-NWSE, 18-1N-27W, el. 2455' (K.B.)



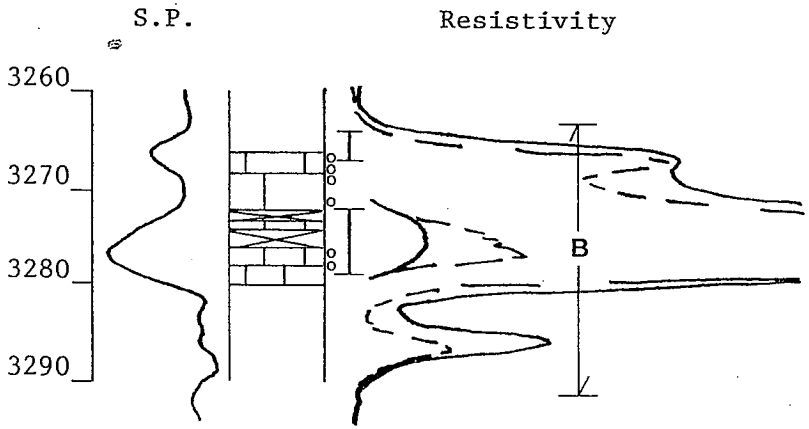
3150-52½	Shale - red and green.
3152½-54½	Limestone - finely crystalline, vuggy porosity, top six inches bleeding oil, next 18 inches oil spotted.
3154½-58	Limestone - very shaly.
3158-60	Limestone - finely crystalline, some shale filled fractures, bleeding oil.
3160-62	Limestone - finely crystalline, dense, few fractures, mostly shaly, no show.
3162-64	Limestone - medium to coarse crystalline, fractured, fair porosity, saturated, bleeding oil.
3164-65	Limestone - dense, few shale filled fractures, no show.
3165-67	Limestone - coarsely crystalline, fossiliferous, fair porosity and saturation, bleeding oil.
3167-68	Shale - green, with lime nodules.
3168-69½	Limestone - dense, with shale partings.
3169½-72	Shale - partly limy.
3172-75	Limestone - dense, finely crystalline, with few very thin shale streaks, no show.

EMPIRE No. U-2 DANBURY, C-SWSE, 18-1N-27W, el. 2455' (K.B.)



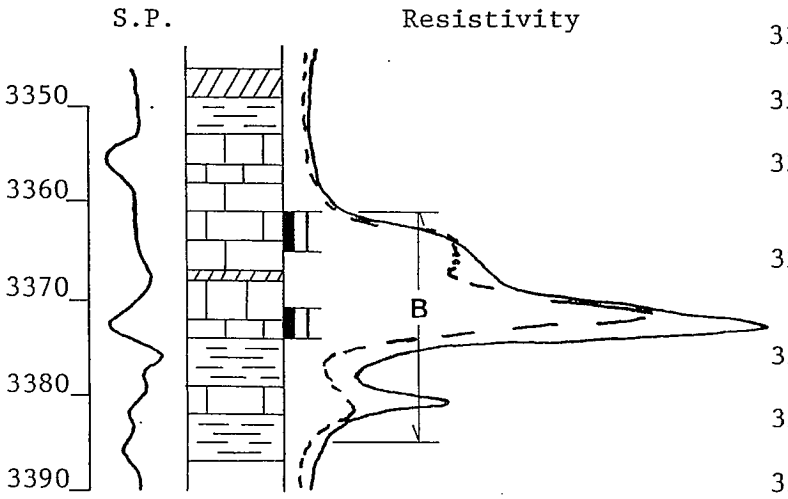
3150-51¼	Shale - green.
3151¼-52 3/4	Limestone - tan, dense, finely crystalline with green shale streaks.
3152 3/4-53¼	Limestone - gray, fossiliferous, spotted porosity, bleeding in spots.
3153¼-55	Limestone - gray, dense, fossiliferous with a few pieces of green shale.
3155-58	Shale - gray-green, limy.
3158-62	Limestone - gray, dense, very finely crystalline.
3162-66½	Limestone - gray, finely crystalline, fossiliferous, vertical fracturing, some vuggy porosity, bleeding oil in spots, best porosity 3165 3/4 to 3166¼.
3166½-68	Limestone - tan, dense, very finely crystalline.
3168-72	Shale - red and green, limestone streaks and nodules.
3172-74½	Limestone - gray, dense, very finely crystalline.
3174½-75	Shale - gray-green, limy.

SUPERIOR No. 41-22 SPRINGER, NENE, 22-1N-27W, el 2556' (K.B.)*



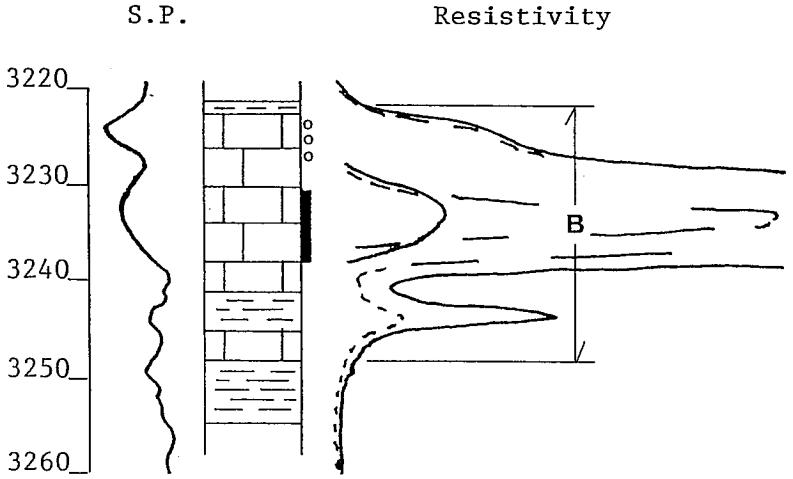
3266-68	Limestone (wackestone) - white (7.5YR8/1), small vugs, oil stained.
3268-69	Same with larger vugs and stronger oil stains.
3269-70	Same without vugs or stain, hard, tight, no show.
3270-71	Limestone (wackestone) - white (7.5YR8/1), oil stained vugs.
3271-72	Same with large vugs, strongly stained.
3272-73	Lost.
3273-74	Limestone (wackestone) - light gray (10YR 7/1), hard, tight, no show.
3274-76	Lost.
2376-79	Limestone (wackestone) - light gray (10YR 7/1) to pale brown (10YR6/3), very strong oil stain, porous.
3279-80	Limestone (wackestone) - light gray (10YR 7/1), hard, tight, no show.

PETROLEUM MANAGEMENT No. 1 RYAN, C-NENE, 2-1N-28W, el. 2666' (K.B.)*



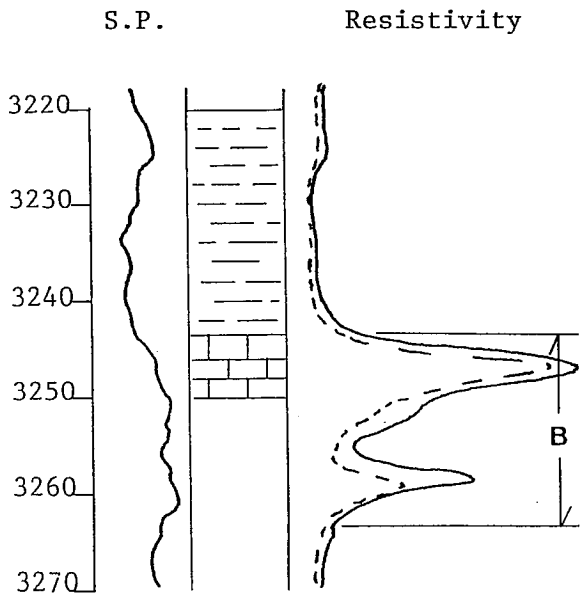
3346-49	Shale - reddish brown (2.5YR5/4), clayey, slightly calcareous, brittle.
3349-53	Shale - gray (5YR6/1), silty, calcareous, brittle.
3353-57	Limestone (mudstone) - gray (5Y6/1), hard, tight, no show.
3357-59	Limestone (wackestone) - gray (5Y6/1), small vugs, hard, fossiliferous, no show.
3359-62½	Limestone (mudstone) - light gray (10YR7/1), small vugs, porous, slight show of oil form 61-62½.
3362½-67	Limestone (wackestone) - greenish gray (5GY 6/1), hard, tight, slight show of oil from 62½-65.
3367-68	Shale - reddish brown (5YR5/3), clayey, brittle.
3368-71	Limestone (wackestone) - white (10YR8/1), hard, tight no show
3371-73	Limestone (mudstone) - pinkish gray (5YR6/2), silty, good porosity and permeability, fair show of oil.
3373-74	Limestone (mudstone) - gray (10YR6/1), slightly shaly, hard, tight, fair show of oil.
3374-79.	Shale.
3379-82	Limestone - hard, tight, no show.
3382-85	Shale.

FRONTIER No. 1 YOUNG, C-SWNE, 25-1N-28W, el. 2497' (K.B.)



3221-22	Shale - green.
3222-25	Limestone - hard, tight, few spots of vuggy porosity, slight oil stained.
3225-30½	Limestone - hard, tight, no show.
3230½-38	Limestone - finely crystalline, hairline fractures associated with bleeding oil.
3238-41	Limestone - hard, tight, dense, no show.
3241-45	Shale.
3245-48	Limestone - hard, tight, dense, no show.
3248-54½	Shale - red and green.

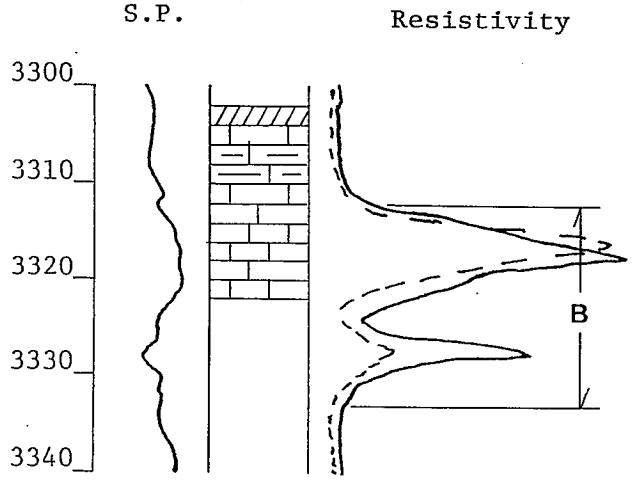
PLYMOUTH No. 1 LEMASTER, C-SESE, 13-2N-26W, el. 2500' (K.B.)*



3220-43½ Shale - red and green mottled with limestone inclusions.

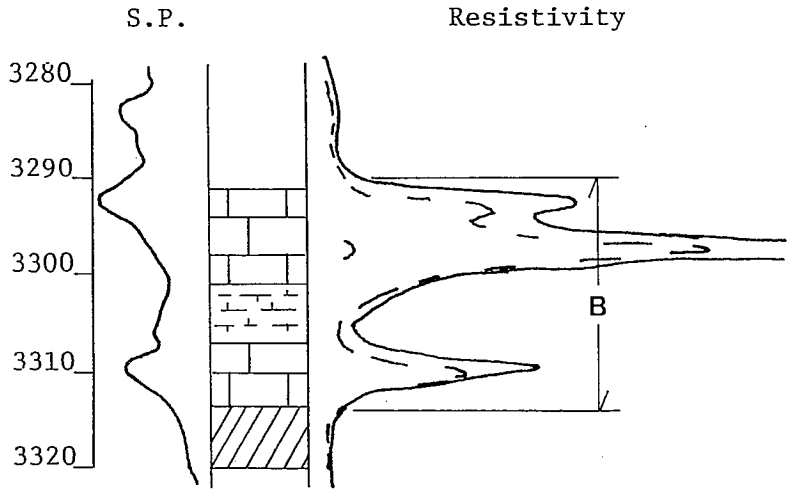
3243½-50 Limestone - dense, gray, fossiliferous, with interbedded thin green shale.

HUBER No. 1 HARSCH, C-SWNE, 17-2N-26W, el. 2571' (K.B.)*



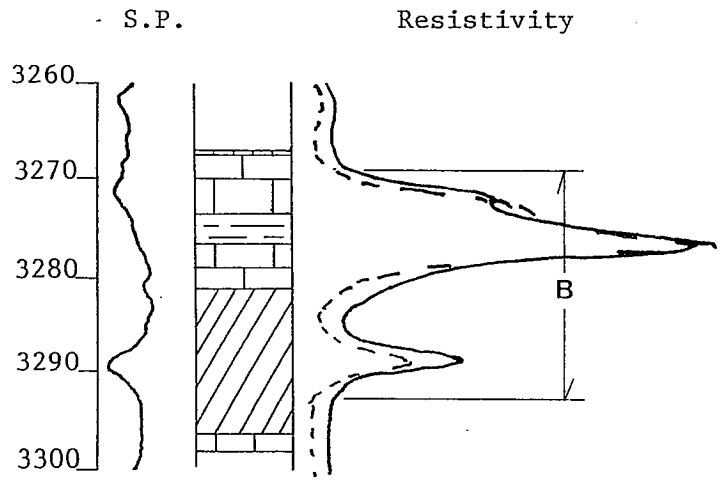
3302-04	Shale - reddish brown (5YR4/3), silty, calcareous.
3304-05	Limestone (wackestone) - light gray (10YR7/1).
3305-12	Limestone (crystalline carbonate) - light gray (10YR7/1) alternating with reddish brown (5YR4/3) shale in less than 1 foot intervals grading into shaly limestone (wackestone) with some fossils in the bottom three feet.
3312-15	Limestone (mudstone) - white (5YR8/1) and brown (10YR5/3), no show, tight.
3315-22	Limestone (mudstone) - white (5YR8/1) to light gray (10YR7/1), shaly, tight, no show.

PUBCO No. 2-6 HAYES, C-SENW, 2-2N-27W, el. 2602' (K.B.)*



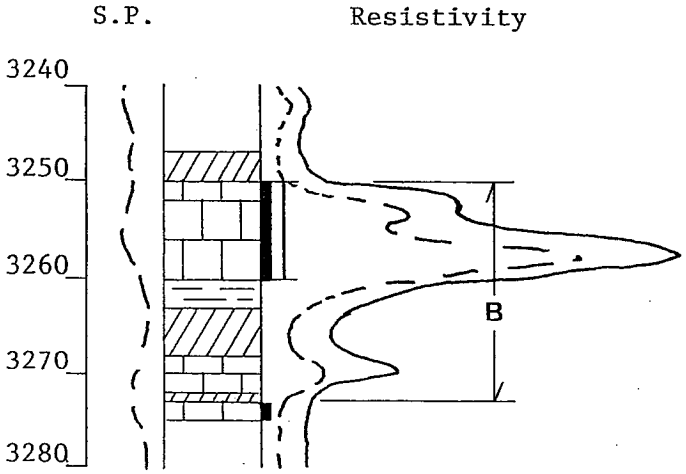
3291-93	Limestone (mudstone) - light gray (10YR7/1), moderate to strong oil stains, vuggy and hard.
3293-94	Same with very weak oil stains.
3294-96	Same as 3291-93 with good oil stain and no vugs but with pinpoint porosity.
3296-97	Same with small vugs.
3297-98	Same with no vugs.
3298-01	Limestone (wackestone) - light gray (10YR7/1), fossiliferous, hard, tight, no show.
3301-07	Shale - light gray (2.5Y7/1), very calcareous, hard, fossiliferous.
3307-11	Limestone (packestone) - light gray, 2.5Y7/1), very calcareous, hard, fossiliferous, hard, tight, no show.
3311-13½	Limestone (packestone) - light reddish brown (5YR6/4), fossiliferous, hard, small vugs, no show, with interbedded hard, calcareous and clayey shale in upper 1'.
3313½-20	Shale - reddish brown (2.5YR4/4), fractured, hard, calcareous, slight silty.

PUBCO No. 1 STRITT, C-NWSE, 4-2N-27W, el. 2562' (K.B.)



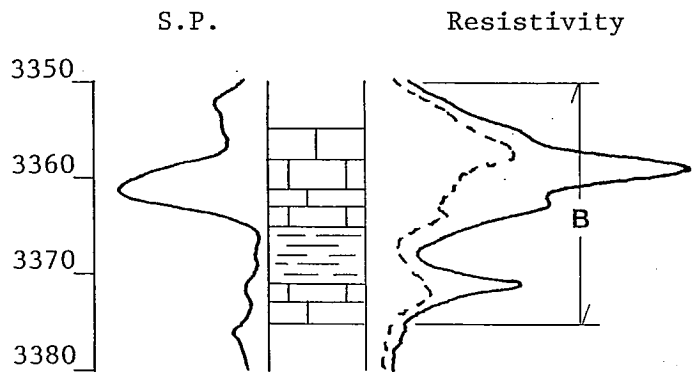
3267–67½ Limestone - dense, fractures.
3267½–73½ Limestone - gray, fossiliferous.
3273½–76½ Shale - gray with limestone pebbles.
3276½–81 Limestone - pink, gray, vuggy porosity, no show.
3281–96½ Shale - maroon.
3296½–98 Limestone - gray, some vuggy porosity, no show.

GREAT WESTERN No. 4 COYLE, C-NWNW, 9-2N-27W, el 2537' (K.B.)



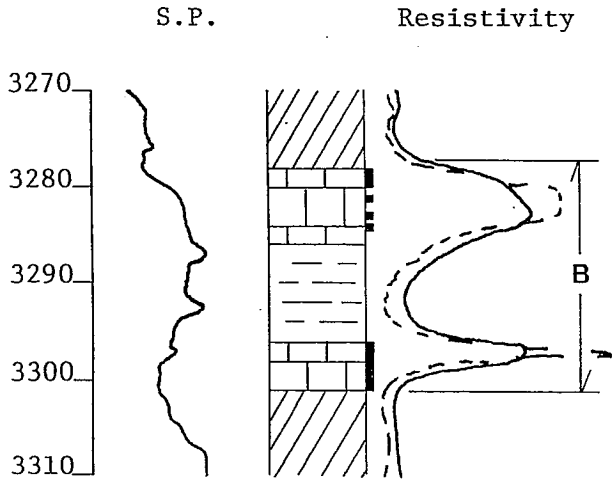
3247-50	Shale - red.
3250-60	Limestone - small vugs, good porosity, good oil satuation.
3260-63	Shale - gray, calcareous.
3263-68	Shale - red.
3268-72	Limestone - shaly, dense.
3272-73	Shale - red.
3273-75	Limestone - buff, large vugs, spotty oil saturation.

PUBCO No. 27-1 STOLLER, C-NENE, 27-2N-27W, el. 2628' (K.B.)



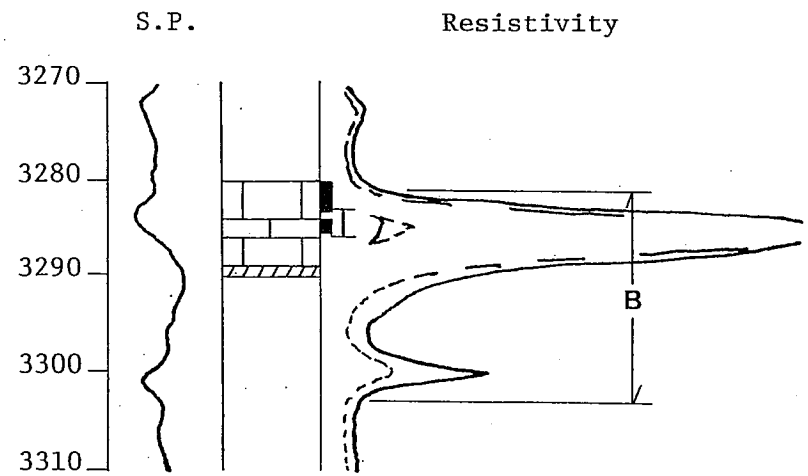
3355-61	Limestone - blue-gray, dense.
3361-65	Limestone - fossiliferous, good stain, small fractures.
3365-71	Shale - calcareous, gray.
3371-75	Limestone - shaly, dense.

BURCH No. 1 LEHN, C-SESE, 3-2N-28W, el. 2584' (K.B.)



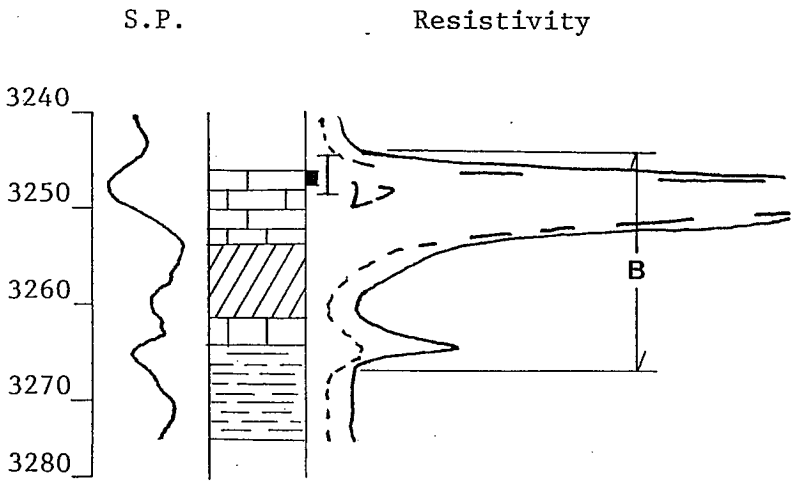
3270-78	Shale - red.
3278-80	Limestone - light tan, finely crystalline, some matrix porosity, spotty bleeding of black oil, no vugs.
3280-84½	Limestone - hard, tight, reworked with abundant shale inclusions, few spots of bleeding oil.
3284½-86	Limestone - hard, tight, shaly, no show.
3286-96	Shale - variegated, with limestone inclusions at base.
3296-01	Limestone - light tan, finely crystalline, some vertical fractures, tight to slight matrix porosity and permeability, no vugs, shaly in part, bleeding black oil.
3301-13	Shale - red.

FRONTIER No. 5 HOFMAN, C-NESE, 11-2N-28W, el. 2601' (K.B.)



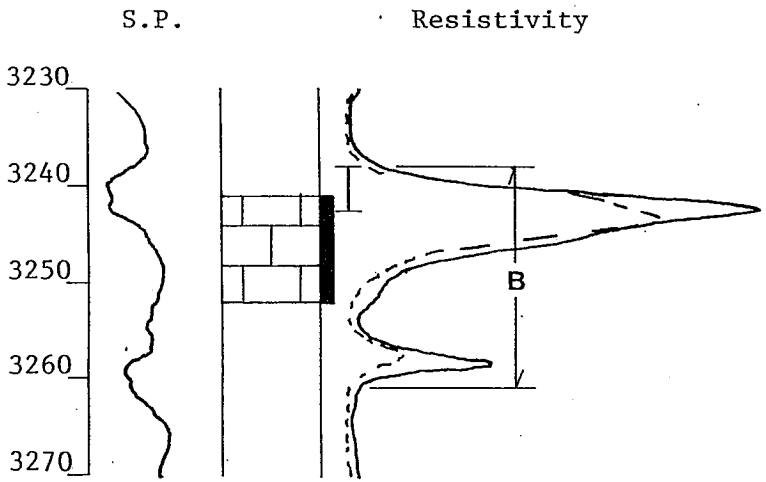
3280-83	Limestone - finely crystalline, fragmental, reworked, oil saturated, fossiliferous, good matrix and vugular porosity and permeability, bleeding oil heavily.
3283-84	Limestone - light gray, dense, very hard, no porosity and permeability, no show.
3284-85½	Limestone - light tan, dense, hard and tight, with abundant hairline fractures and some large vertical and horizontal fractures all associated with bleeding oil, slightly fossiliferous.
3285½-89	Limestone - light gray, dense, hard and tight, no show, gradient below into a light gray-green, fossiliferous, tight, shaly limestone.
3289-90	Shale - light maroon with green inclusions, limy, hard, few large shell casts.

FRONTIER No. B-1 HOFMAN, C-SESW, 11-2N-28W, el. 2567' (K.B.)



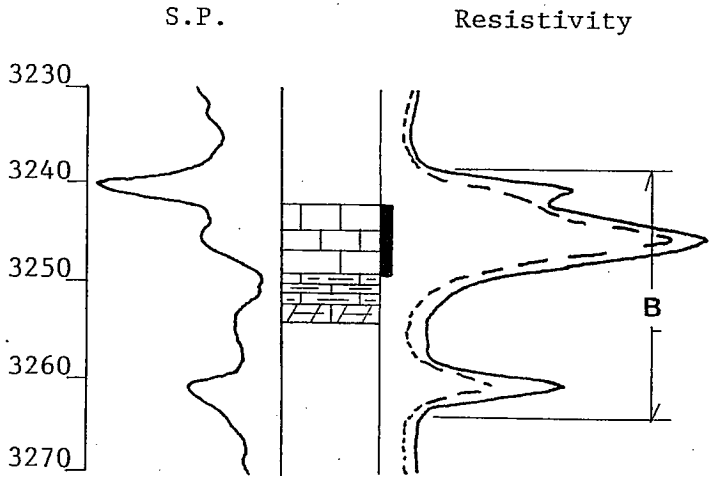
3246-47½	Limestone - finely crystalline, good vugular porosity, oil saturated, fossiliferous, good permeability.
3247½-53½	Limestone - finely crystalline, shaly, no show.
3253½-61	Shale - red, fossiliferous.
3261-64	Limestone - crystalline, hard, tight, no show.
3264-74	Shale - red and green.

FRONTIER No. D-1 HOFMAN, C-SENE, 11-2N-28W, el. 2561' (K.B.)



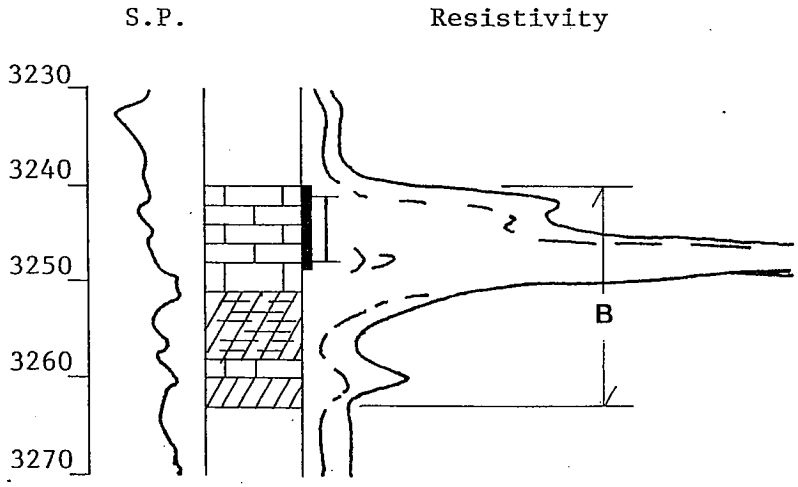
3141-42	Limestone - tan, finely crystalline, slightly fossiliferous, slightly shaly with greenish shale inclusions, fair vugular porosity, fair bleeding of oil, matrix hard and tight with very little porosity.
3242-44½	Limestone - same as above with less shale and with matrix porosity increasing to fair to good bleeding of oil.
3244½-46½	Limestone - tan, matrix finely crystalline, with good uniform porosity, good vugular porosity, very fossiliferous, fully oil saturated, good bleeding of oil.
3246½-47½	Limestone - slight green shale inclusions, finely crystalline, broken and reworked, very fossiliferous, small crisscross hair-line fractures associated with fair stain-in of oil and slight bleeding of oil.
3247½-52	Limestone - grading to shaly limestone, light gray, finely crystalline, massive, hard, tight, dense, fossiliferous with small calcite crystals, fresh breaks reveal small splotches of dead oil and occasional slight bleeding of oil.

FRONTIER No. D-2 HOFMAN, C-SWNE, 11-2N-28W, el. 2565' (K.B.)



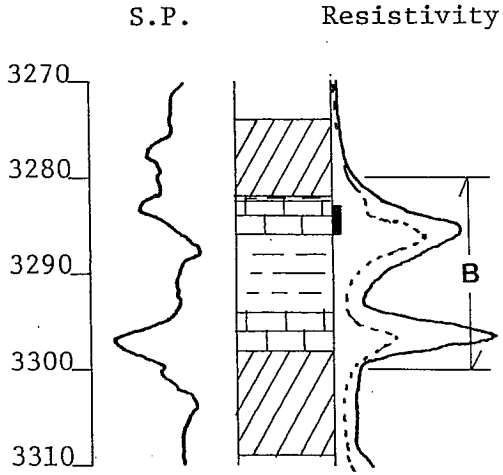
3242-44½	Limestone - shaly, gray, hard, tight, dense, finely crystalline, fine cross-type hairline fractures very slightly bleeding oil.
3244½-48	Limestone - tan, finely crystalline, abundant green shale inclusions, fair vugular porosity, abundant cross-type hairline fractures, fair bleeding of oil, very poor prospect for completion.
3248-49	Limestone - tan, hard, tight, dense, finely crystalline, a few fair vugs with very slight bleeding of oil, grading to shaly limestone.
3249-52	Limestone - shaly, gray, hard, tight, dense, finely crystalline, scattered calcite crystals, no show.
3252-54	Limestone - shaly, as above, but with inclusions of maroon, massive shale.

FRONTIER No. 2 HOFMAN, C-W/2-NWNE, 14-2N-28W, el. 2559' (K.B.)



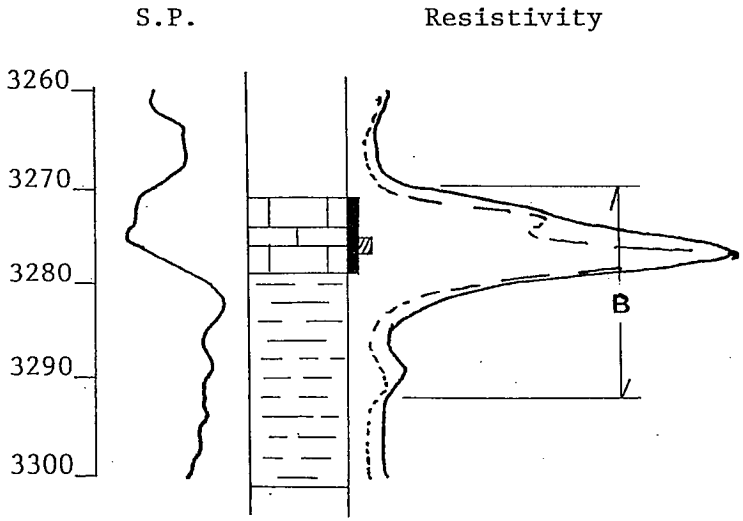
3240-49	Limestone - finely crystalline, scattered vugular porosity to good vugular porosity, bleeding black oil, fossiliferous, some fractures.
3249-51	Limestone - gray-green, very finely crystalline, dense, shaly, no show.
3251-53	Shale - red and green.
3253-60	Limestone - hard, dense, no show.
3260-63	Shale - red.

FRONTIER No. B-2 HOFMAN, C-SWNW, 14-2N-28W, el. 2595' (K.B.)



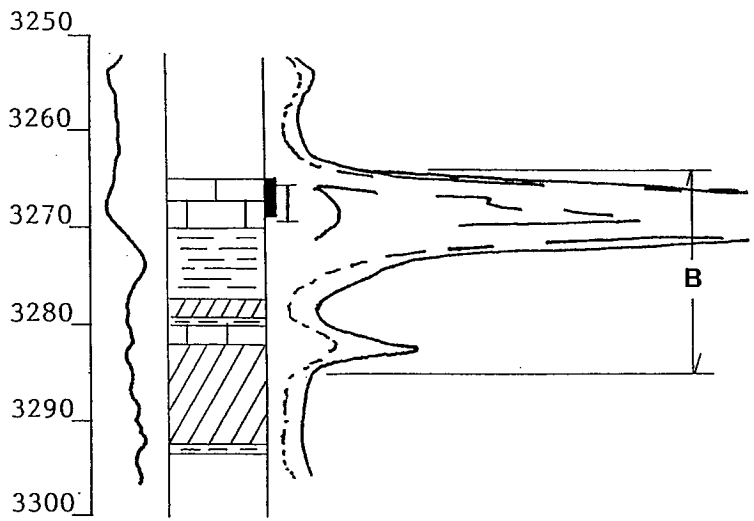
3274-82	Shale - red.
3282-82½	Shale - green, waxy.
3282½-83	Limestone - gray, fossiliferous, tight, no show.
3283-86	Limestone - light tan, dense, tight, scattered bleeding black oil.
3286-94	Shale - red and green, fossiliferous.
3294-95	Limestone - light brown, crystalline, no permeability, no show.
3295-98	Limestone - as above, with vugular porosity, no show.
3298-3309	Shale - red.

FRONTIER No. B-3 HOFMAN, C-NWNW, 14-2N-28W, el. 2587' (K.B.)



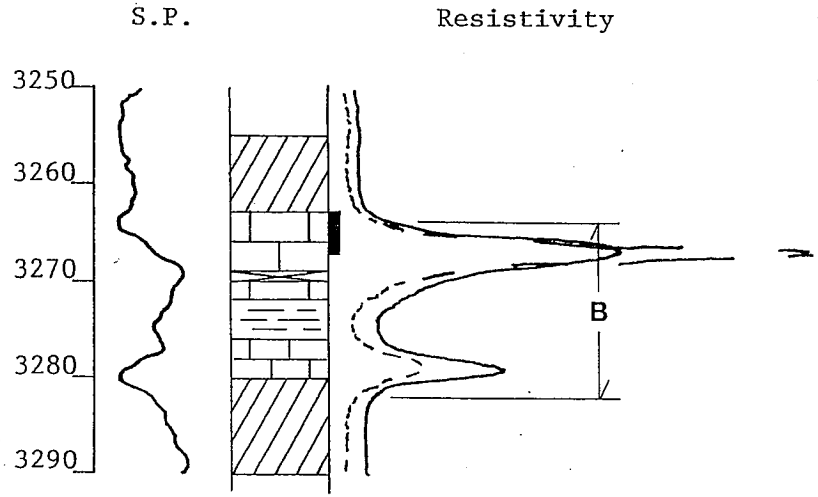
3271-74	Limestone - brown, slight porosity and permeability, matrix dense, inclusions of green shale, slightly bleeding oil.
3274-75	Same as above with good bleeding oil.
3275-76½	Limestone - brown, good porosity and permeability, vuggy, fossiliferous, good bleeding of oil and gas.
3276½-78	Limestone - brown, no porosity and permeability, matrix dense, inclusions of green shale, slightly bleeding oil.
3278-79	Same as above with good porosity and permeability, good bleeding oil.
3279-85½	Shale - green, fossiliferous, massive, no show.
3285½-91	Shale - brown to green, fossiliferous, massive, no show.
3291-01½	Shale - brown, chalky, no show.

FRONTIER No. C-1 HOFMAN, C-SENW, 14-2N-28W, el. 2582' (K.B.)



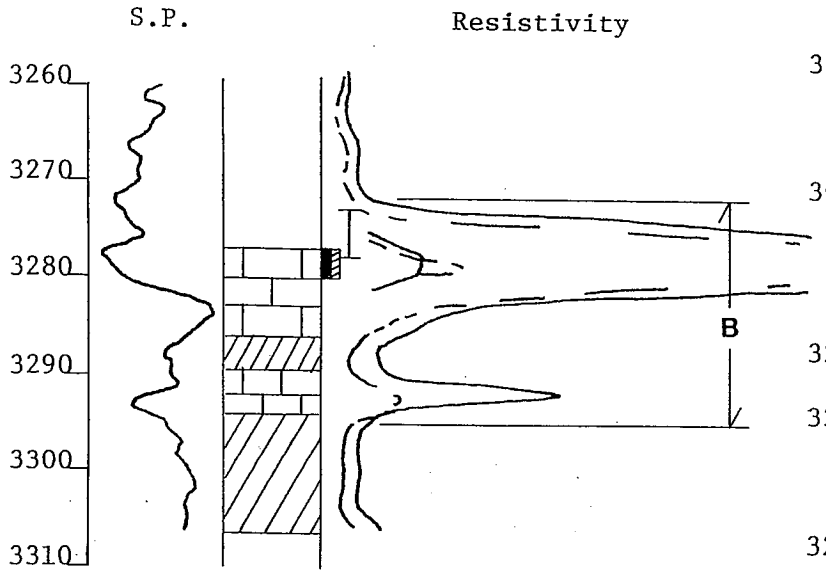
3265-67	Limestone - reworked, finely crystalline, vugular porosity, fossiliferous, abundant spotty saturation, bleeding black oil and gas.
3267-68	Limestone - as above, with some shale inclusions and less overall saturation.
3268-69	Limestone - white, finely crystalline, dense, scattered vugular areas associated with bleeding black oil, zones of green shale inclusions.
3269-70	Limestone - white, very finely crystalline, dense, hard, tight, no show, some calcite inclusions.
3270-71	Shale - green with limestone inclusions, no show.
3271-77	Shale - variegated, silky, fossiliferous.
3277-79	Shale - maroon, silky, highly fossiliferous.
3279-80	Shale - light green, limy, with limestone laminations.
3280-82	Limestone - light tan, crystalline, hard, tight, no show, few green shale inclusions.
3282-92½	Shale - maroon, sub-silky, hard.
3292½-93½	Shale - green, silky.

FRONTIER No. C-2 HOFMAN, C-NENW, 14-2N-28W, el. 2577' (K.B.)*



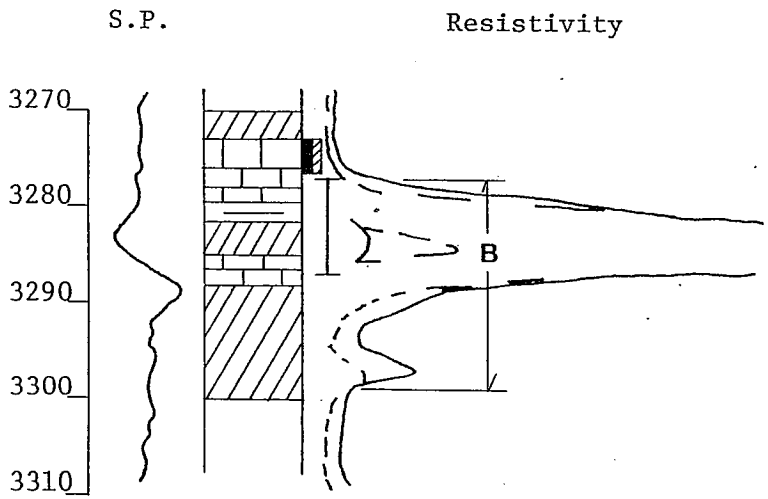
3255-62	Shale - reddish brown (5YR4/3), slightly silty.
3262-63	Shale - reddish brown (5YR4/3) and light gray (5Y7/1), clayey.
3263-67	Limestone (mudstone) - light gray (5Y7/1) with gray shale partings, occasional dark speckles of bleeding oil.
3267-69	Limestone (mudstone) - light gray (5Y7/1), abundant shale (gray) partings and streaks, hard, tight, no show.
3269-72	Limestone (mudstone) - light gray (5Y7/1), argillaceous, fairly hard and tight, abundant partings and streaks of light gray shale (5Y7/1).
3272-76	Shale-gray (5Y6/2) and red (5YR5/2), slightly silty, sparsely fossiliferous, calcareous with occasional shaly limestone streaks.
3276-80	Limestone (packstone) - light gray (10YR 7/2), fossiliferous, hard, tight, no show.
3280-90	Shale - reddish brown (5YR4/3), slightly silty, firm to rotten, irregular fracture.

FRONTIER No. 1 REINERS, C-NWNESW, 14-2N-28W, el. 2598' (K.B.)*



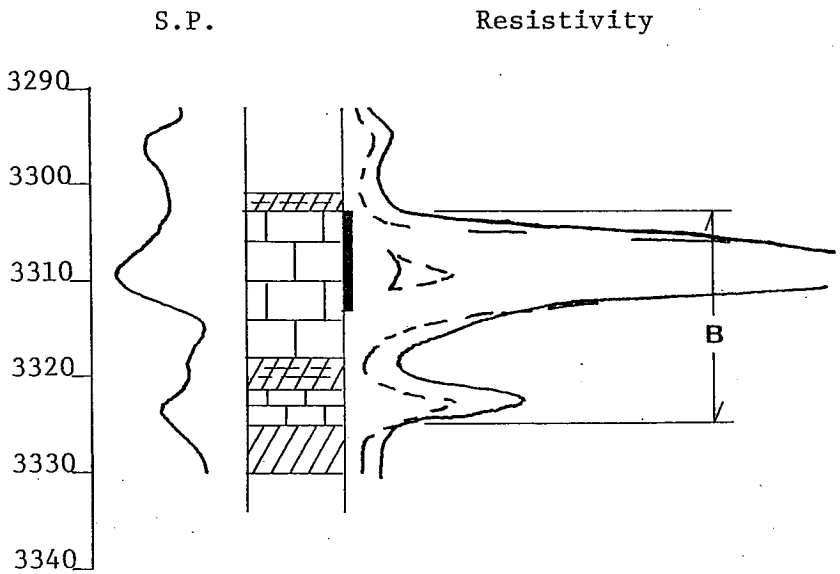
3277-80	Limestone (wackestone) - dark yellow brown (10YR4/4), fossiliferous, vertical fractures, vuggy, fair permeability, bleeding oil and gas.
3280-86	Limestone (wackestone) - light gray (10 YR7/1), fossiliferous, hard, tight, no apparent porosity or permeability, very shaly in bottom two feet, vertical fractures at 81-82', no show.
3286-89½	Shale - reddish brown (5YR4/3), fossiliferous, coarsely silty, calcareous.
3289½-94	Limestone (packstone) - gray (5Y6/1) to white (10YR8/1), fossiliferous, hard, tight, no show, vertical fractures throughout.
3294-06½	Shale - reddish brown (2.5YR 4/4), clayey, calcareous.

FRONTIER No. 2 REINERS, C-SESW, 14-2N-28W, el. 2606' (K.B.)



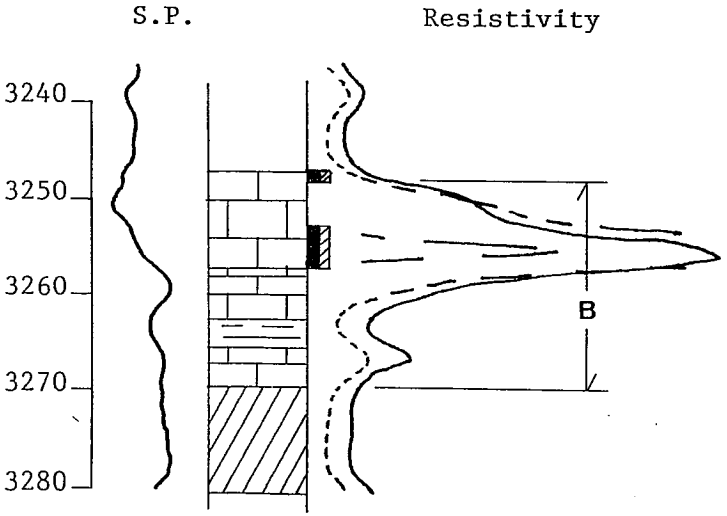
3270-73	Shale - red, gummy, waxy.
3273-74	Limestone - light gray to brown, shaly, slight porosity and permeability, fossiliferous, small vugs, no vertical fractures, bleeding oil and gas.
3274-76½	Limestone - light gray to brown, fossiliferous, few vugs, light porosity and permeability, bleeding oil and gas.
3276½-79½	Limestone - light gray, dense, interbedded gray to green shale, fossiliferous, brittle.
3279½-81½	Shale - gray to green, brittle to waxy, fossiliferous.
3281½-85	Shale - red to green, mottled, waxy.
3285-88	Limestone - light gray, dense, no permeability and porosity, birds eye, no show.
3288-00	Shale - red, waxy, fossiliferous.
3300-02	Limestone - light gray, dense, vertical fracture, shaly, bleeding oil and gas.
3302-13½	Limestone - brown to gray, fossiliferous, stylolitic, very vuggy, good porosity and permeability, bleeding oil and gas.
3313½-14½	Limestone - light gray to brown, slight porosity and permeability, fossiliferous, shaly, bleeding oil and gas.

FRONTIER No. 3 REINERS, SWSW, 14-2N-28W, el. 2624' (K.B.)



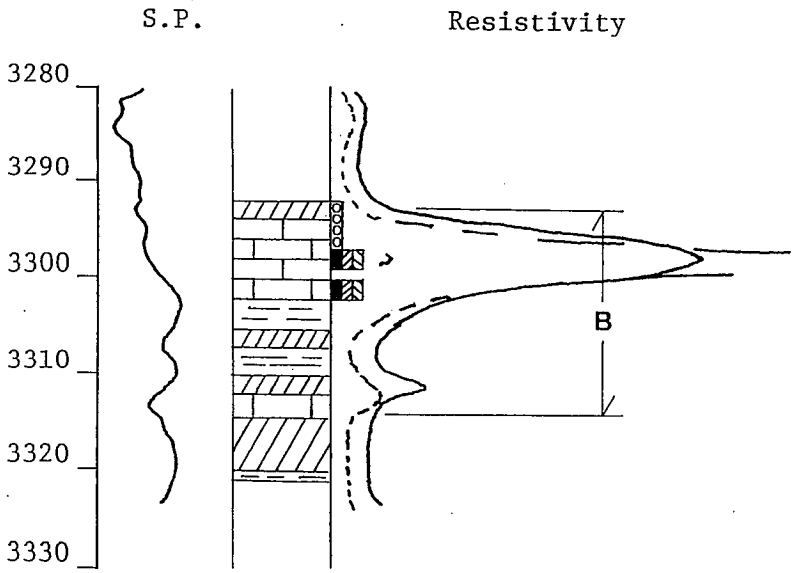
3301-03	Shale - green and red.
3303-13	Limestone - finely crystalline, with scattered vuggy porosity associated with bleeding oil, but many tight non-permeable zones.
3313-18	Limestone - gray-green, finely crystalline, shaly, dense, hard, no show.
3318-21½	Shale - red and green.
3321½-25	Limestone - dense, hard, tight, no show.
3325-30	Shale - red.

FRONTIER No. B-2 REINERS, SWSE, 14-2N-28W, el. 2567' (K.B.)



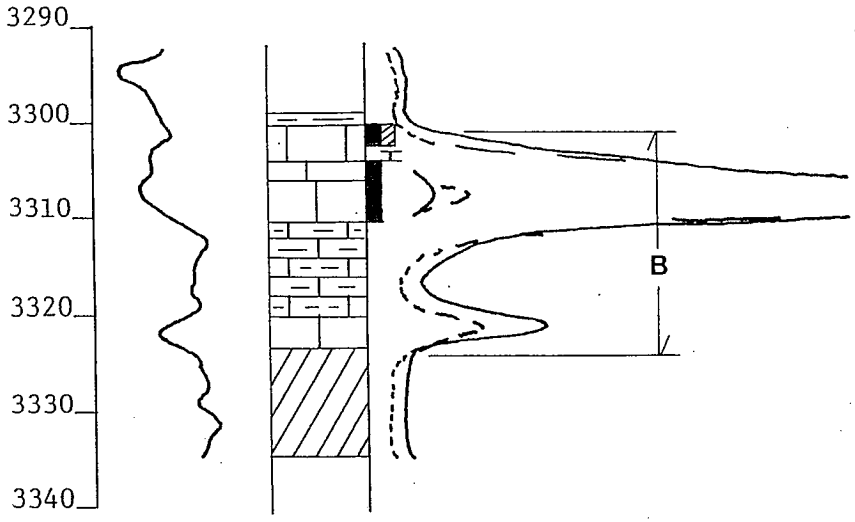
3247-51	Limestone - gray, dense, no porosity and permeability, fossiliferous, slight bleeding of oil and gas top one foot.
3251-52½	Limestone - gray, shaly, dense, no porosity and permeability, fossiliferous, no show.
3252½-53	Limestone - as above, vugular bleeding of oil and gas.
3253-54½	Limestone - brown to gray, vuggy, slight porosity and permeability, fossiliferous, matrix dense, bleeding oil and gas.
3254½-57	Limestone - gray, dense, no porosity and permeability, fossiliferous, vertical cracks, small zones of scattered vugs bleeding oil and gas, stylolitic.
3257-62½	Limestone - as above, no porosity and permeability, no show, with gray, fossiliferous, massive shale.
3262½-65½	Shale - steel gray, fossiliferous.
3265½-67½	Limestone - gray, dense, no porosity and permeability, fossiliferous, no show.
3267½-69½	Limestone - same as above.
3269½-80½	Shale - red, gummy, fossiliferous.

FRONTIER No. 3 KUNKEE, C-NENE, 15-2N-28W, el. 2605' (K.B.)



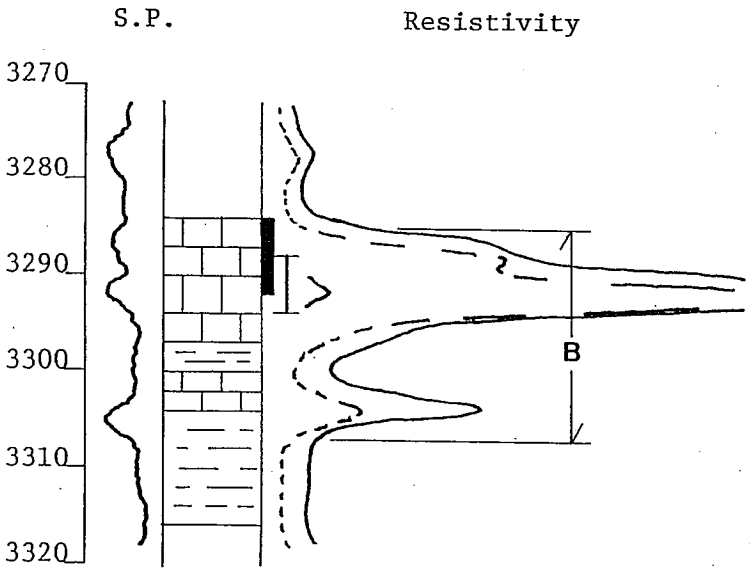
3292-94	Shale - red, finely granular with scattered green spots.
3294-97	Limestone - light tan, dense, with green, subwaxy, interculated shale, tight, no show except for some black residual oil splotches.
3297-99	Limestone - light tan, finely crystalline, reworked, some matrix porosity and permeability, scattered vugular porosity, fossiliferous, bleeding black oil, gas and water.
3299-00	Limestone - light gray, dense, with interculations of light green, limy shale, hard, tight, no show.
3300-02	Limestone and shale - as above with some vugular and matrix porosity and permeability, heavily bleeding oil, gas and water.
3302-05	Shale - light green, silky, very limy, very fossiliferous.
3305-07	Shale - dark red, hard, silky.
3307-10	Shale - gray-green, silky to subwaxy, slightly fossiliferous with some splotches of ocher and red shale.
3310-12	Shale - red, very fossiliferous.
3312-14½	Limestone - light tan, finely crystalline, hard, tight, dense, no show, with inclusions of gray-green, limy shale, and calcite veins.
3314½-20	Shale - red, silky to subwaxy.
3320-21	Shale - green, silky.

FRONTIER No. B-3 REINERS, C-SESE, 15-2N-28W, el. 2622' (K.B.)



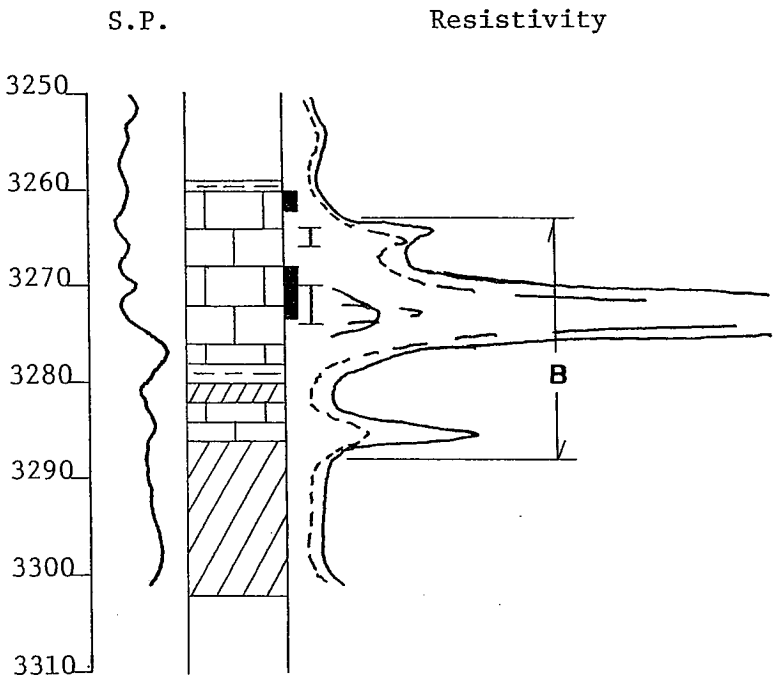
3299-00½	Shale - green, waxy.
3300½-01	Limestone - brown, fossiliferous, fair porosity and permeability, dense matrix, slight bleeding of oil and gas.
3301-02½	Limestone - brown, fossiliferous, good porosity and permeability, vertical fractures, good bleeding of oil and gas.
3302½-04	Limestone - brown, dense, tight, inclusions of shale, no show.
3304-07½	Limestone - brown, fossiliferous, good porosity and permeability, dense, matrix, good bleeding of oil.
3307½-10½	Limestone - brown, fossiliferous, slight porosity and permeability, matrix dense, slight bleeding of oil.
3310½-20	Limestone - brown, dense, tight, fossiliferous, inclusions of green shale, a very shaly limestone.
3320-23	Limestone - brown, dense, tight, no show.
3323-34½	Shale - red, waxy.

BRITISH AMERICAN AND VOLENTINE No. 1 ESCH, C-NENE, 22-2N-28W, el. 2614' (K.B.)*



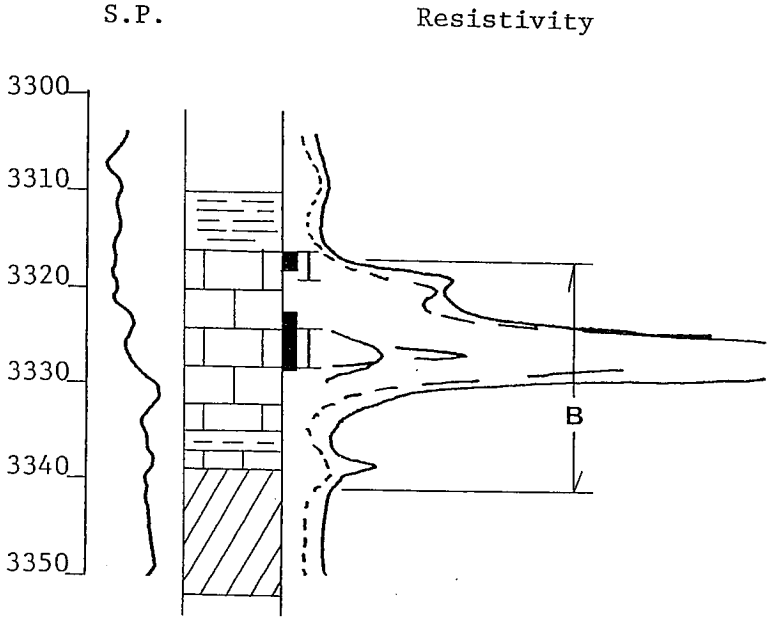
3284-87	Limestone (wackestone) - light gray (5Y7/2), vugs filled with oil, hard, bleeding oil, very large fusilinids.
3287-92	Limestone (crystalline carbonate) - light gray (10YR7/1), fine to medium texture, vuggy, porous, bleeding oil.
3292-93	Limestone (crystalline carbonate) - light gray (2.5Y7/2), medium texture, calcite filled vugs, hard, tight.
3293-97	Limestone (mudstone) - gray (5Y6/1), few fossils, slightly shaly, hard, tight, no show.
3297-00	Shale - gray (5Y6/1), to brown (7.5YR5/4), laminated and variegated, fossiliferous, slightly silty, calcareous.
3300-01	Limestone (wackestone) - light gray (5Y7/1), fossiliferous, hard, tight, no show.
3301-02	Limestone (mudstone) - light gray (5Y7/1), hard, tight, no show.
3302-03	Limestone (packstone) - pale yellow (5Y7/3), fossiliferous, hard, tight.
3303-04	Limestone (mudstone) - light gray (10YR7/1), slightly fossiliferous, hard, tight, no show.
3304-16	Shale - reddish brown (5YR4/3), slightly silty, calcareous, hard.

BRITISH AMERICAN AND VOLENTINE No. 6 Newton, C-SESW, 22-2N-28W, el. 2586' (K.B.)



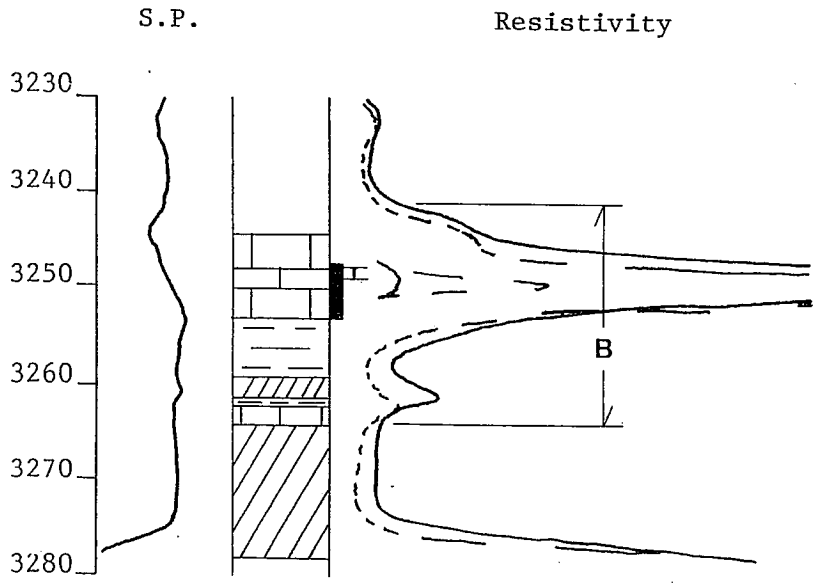
3259-60	Shale - greenish gray (5GY6/1), very slightly silty, firm.
3260-62	Limestone (crystalline carbonate) - dark greenish brown (2.5Y4/2), bleeding oil, hard, vuggy porosity.
3262-68	Limestone (mudstone) - light gray (10YR7/1), very fine textured, hard, tight, no show.
3268-73	Limestone (crystalline carbonate) - dark grayish brown (2.5Y4/2), fine grained, hard, fair porosity, bleeding oil, decrease in porosity from 3271-73.
3273-78	Limestone (crystalline carbonate) - light gray (N7/), fine grained, hard and tight.
3278-80	Shale - gray (5Y5/1), very slightly silty, calcareous.
3280-82	Shale - weak red (2.5YR4/2), slightly silty, calcareous.
3282-86	Limestone (mudstone) - gray (5Y6/1), hard, tight, no show.
3286-02	Shale - reddish brown (5YR4/2), very slightly silty, calcareous.

BRITISH AMERICAN AND VOLENTINE No. 1 CASHEN, C-NWSW, 23-2N-28W, el. 2659' (K.B.)



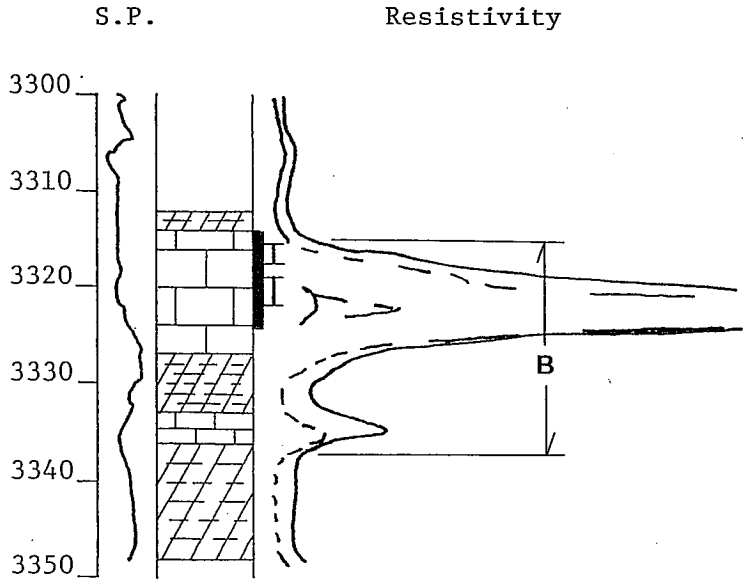
3310-16	Shale - red and gray.
3316-18	Limestone - hard, slightly porous, bleeding oil.
3318-22½	Limestone - light gray to buff, hard, tight.
3322½-24	Limestone - buff, shaly, hard, tight to occasional fair porosity, bleeding some oil.
3324-28½	Same as above.
3328½-35	Limestone - gray, hard, tight.
3335-37	Shale.
3337-39	Limestone - gray, hard, tight.
3339-52	Shale - red.

FRONTIER No. 5 REINERS, C-NWNE, 23-2N-28W, el. 2572' (K.B.)



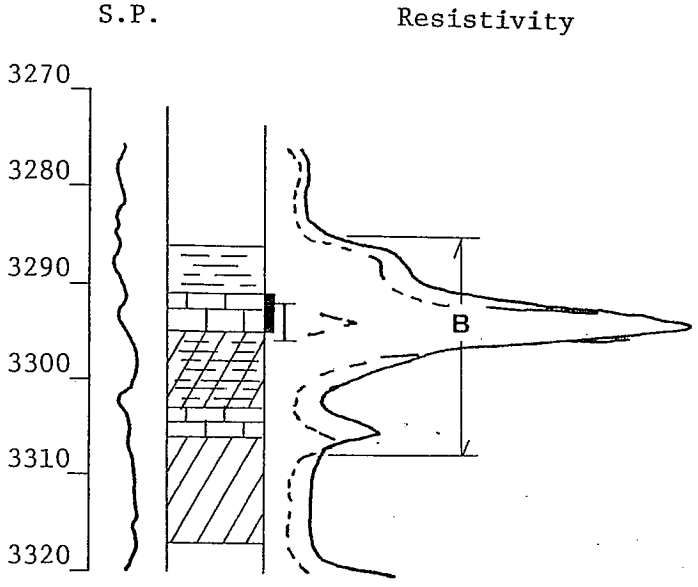
3244-44½	Shale - gray-green, soft, waxy, very fossiliferous (ostracods).
3244½-47½	Limestone - light gray, finely crystalline, tight, hard, dense, slightly fossiliferous, no show, with scattered thin partings of green, waxy shale, few pyrite inclusions.
3247½-51	Limestone - light tan, finely crystalline, reworked, good vuggy porosity with some matrix porosity, fossiliferous (fusilinids), heavily bleeding black oil, some gas, calcite lined vugs.
3251-53	Limestone - as above with definite decrease in amount of porosity of both types.
3253-59	Shale - gray-green with limy streaks, fossiliferous (fusilinids and crinoid stems).
3259-61	Shale - red, silky, fossiliferous, (pelecypods, crinoid stems and fusilinids), with some limy streaks.
3261-62	Shale - gray-green, subwaxy, fossiliferous (ostracods, sponge spicules), some limy streaks.
3262-64	Limestone - light tan, finely crystalline, hard, tight, no show, few fossils, abundant inclusions, large calcite crystals.
3264-78	Shale - red, silky.

FRONTIER No. C-1 REINERS, C-NWNW, 23-2N-28W, el. 2642' (K.B.)



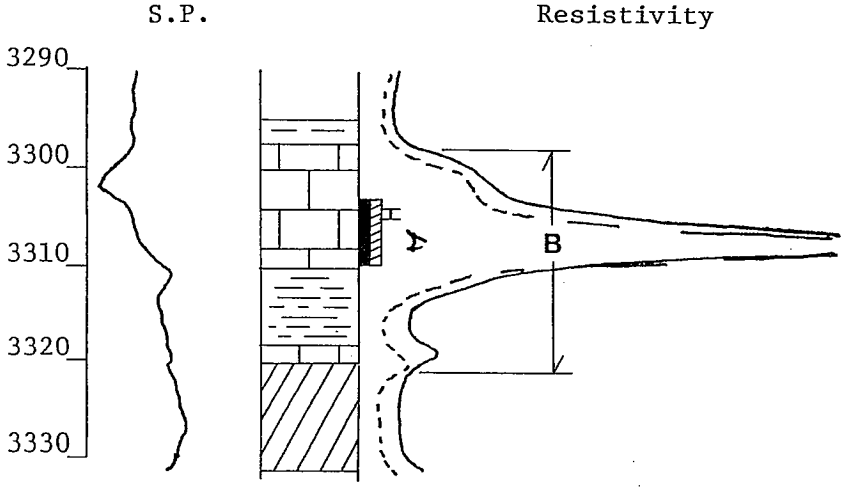
3312-14	Shale - red and green.
3314-24	Limestone - finely crystalline, some vugular porosity, bleeding oil, some tight zones.
3324-27	Limestone - green, very shaly, very finely crystalline, tight, no show.
3327-33	Shale - red and green.
3333-36	Limestone - crystalline, tight no porosity or permeability, no show.
3336-48	Shale - red and green.

FRONTIER No. C-2 REINERS, C-NENW, 23-2N-28W, el. 2619' (K.B.)



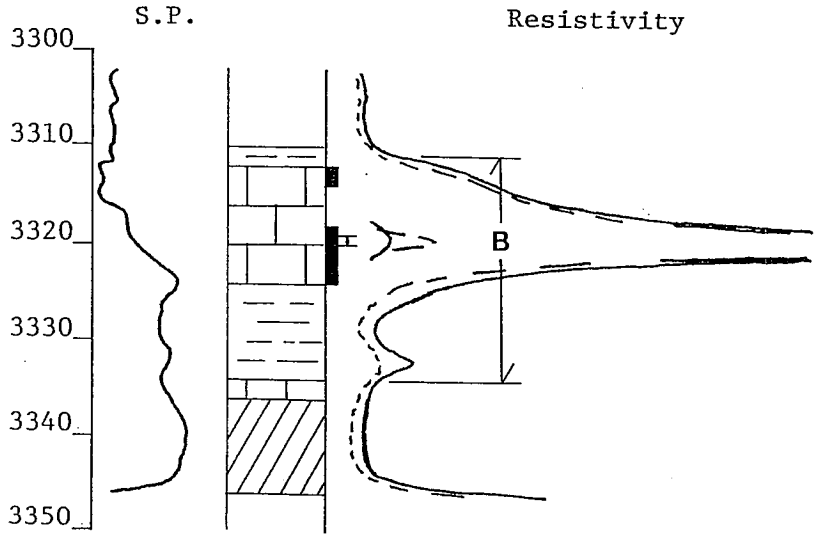
3286-91	Shale - green.
3291-95	Limestone - dense, some vuggy porosity, oil stain and bleeding oil.
3295-03	Shale - red and green.
3303-06	Limestone - finely crystalline, shaly, dense, hard, tight, no show.
3306-17	Shale - red.

FRONTIER No. C-3 REINERS, C-SENW, 23-2N-28W, el. 2632' (K.B.)



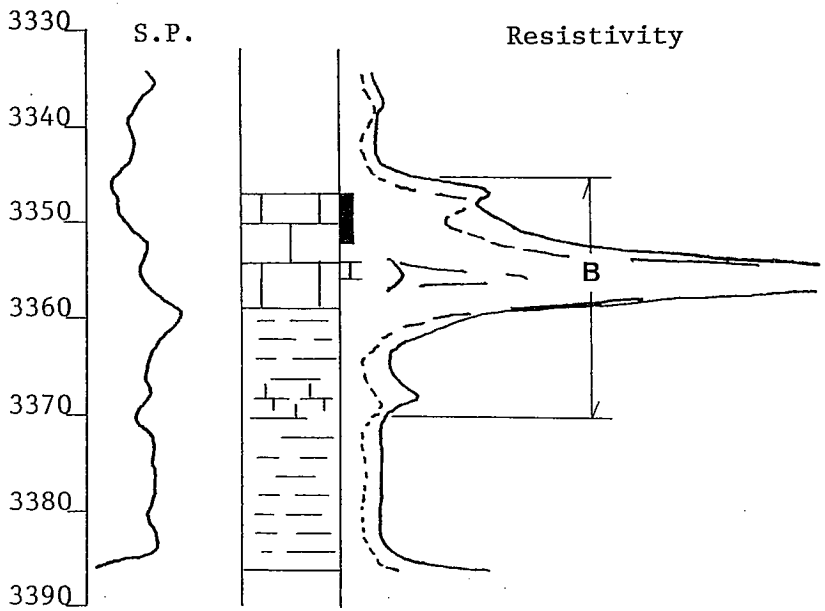
3295-97½	Shale - red to green, massive, fossiliferous.
3297½-00½	Limestone - gray, dense, fossiliferous, no porosity and permeability. very shaly, no show.
3300½-03	Limestone - gray, dense, no porosity and permeability, slightly shaly, fossiliferous, scattered vugs, no show.
3303-04	Limestone - gray, dense, no porosity and permeability, finely crystalline, fossiliferous, slight bleeding of oil and gas, interbedded shale, green and fossiliferous.
3304-07	Limestone - brown to gray, good porosity and permeability, vuggy, fossiliferous, few dense zones, bleeding black oil and gas.
3307-09½	Limestone - gray, slight porosity and permeability, matrix dense, vuggy, fossiliferous, bleeding oil and gas.
3309½-10	Limestone - gray, dense, no porosity and permeability, fossiliferous, no show.
3310-18	Shale - gray to red, fossiliferous, massive, calcareous, limestone inclusions as above, no show.
3318-20	Limestone - gray, dense, no porosity and permeability, fossiliferous, shaly, no show.

FRONTIER No. C-4 REINERS, C-SWNW, 23-2N-28W, el. 2646' (K.B.)



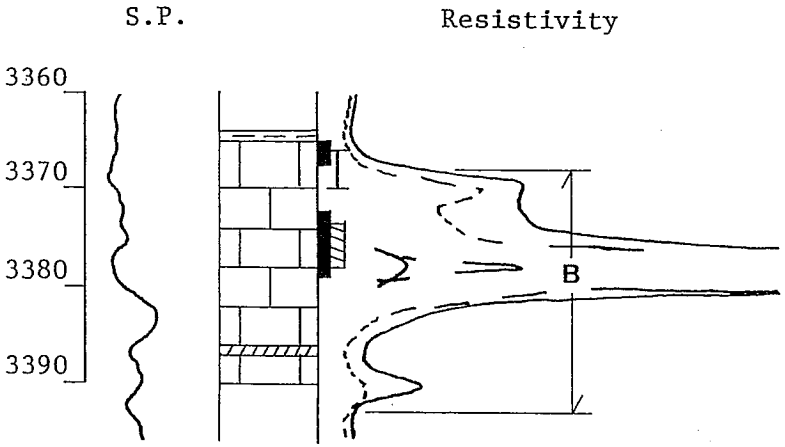
3310-12	Shale - gray-green, silty.
3312-14	Limestone - light tan, finely crystalline, spotty porosity and permeability with associated bleeding black oil, some hairline fractures, thin interbedded shale.
3314-18	Limestone - light gray, dense, hard, tight, no show, with interbeds of green, waxy shale.
3318-24	Limestone - light tan, finely crystalline, fossil hash, vugular, heavily bleeding black oil.
3324-34	Shale - gray-green and red, slightly fossiliferous.
3334-36	Limestone - light gray, dense, very hard and tight, fossiliferous, no show, some thin partings of green shale.
3336-46	Shale - red, silky, very slightly fossiliferous.

FRONTIER No. A-1 HAAG, C-NWNW, 26-2N-28W, el. 2668' (K.B.)



3347-52	Limestone - yellowish-gray, reworked, hard, dense, bleeding oil from occasional fractures along bedding planes, interbedded greenish-gray waxy shale, bedding very irregular.
3352-59	Limestone - reworked, yellowish-gray, granular, greenish-gray shale inclusions, some vertical fractures, pinpoint to vugular porosity.
3359-65	Shale - greenish-gray, limy, with abundant limestone inclusions in upper portion.
3365-67	Shale - reddish-brown, limy.
3367-70	Shale - very limy, mottled white, gray, green and reddish-brown.
3370-86	Shale - reddish-brown to greenish-gray, limy.

FRONTIER No. A-2 HAAG, C-SWNW, 26-2N-28W, el. 2682' (K.B.)



3364-65 Shale - gray, firm.

3365-67 Limestone - buff to brown, finely crystalline, occasionally argillaceous with gray shale, slight matrix porosity, poor vertical fractures, bleeding oil.

3367-67½ Limestone - buff, finely crystalline, partings and thin streaks of gray shale, hard, tight, slightly bleeding oil.

3367½-72½ Limestone - buff to gray, finely crystalline, slightly pyritic and fossiliferous, hard, tight, no show.

3372½-73½ Limestone - buff, very finely crystalline, slightly pyritic and fossiliferous, occasional partings gray shale, slight to fair bleeding oil, slight vugular porosity.

3373½-78 Limestone - buff, finely crystalline, firm, small to medium sized vugs, heavily bleeding oil, some water.

3378-79 Limestone - buff, finely crystalline, hard, slight vugular porosity, slightly bleeding oil.

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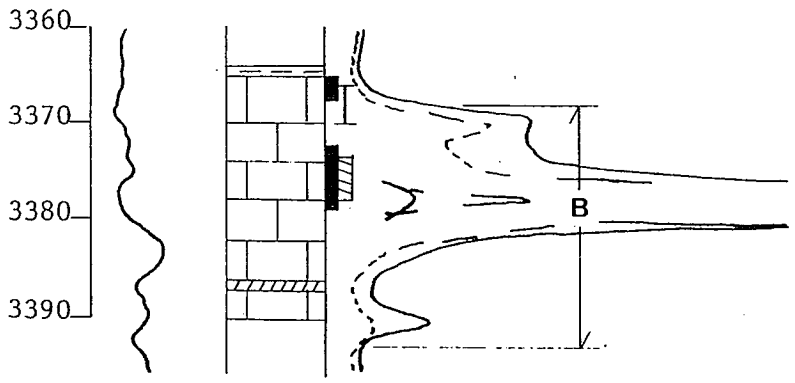

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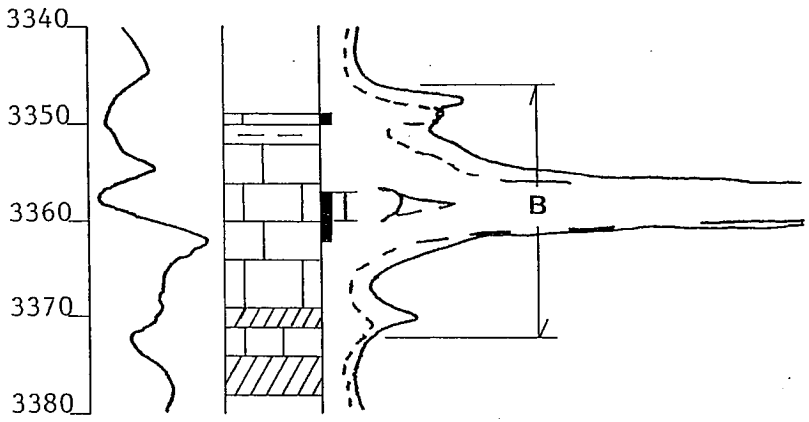
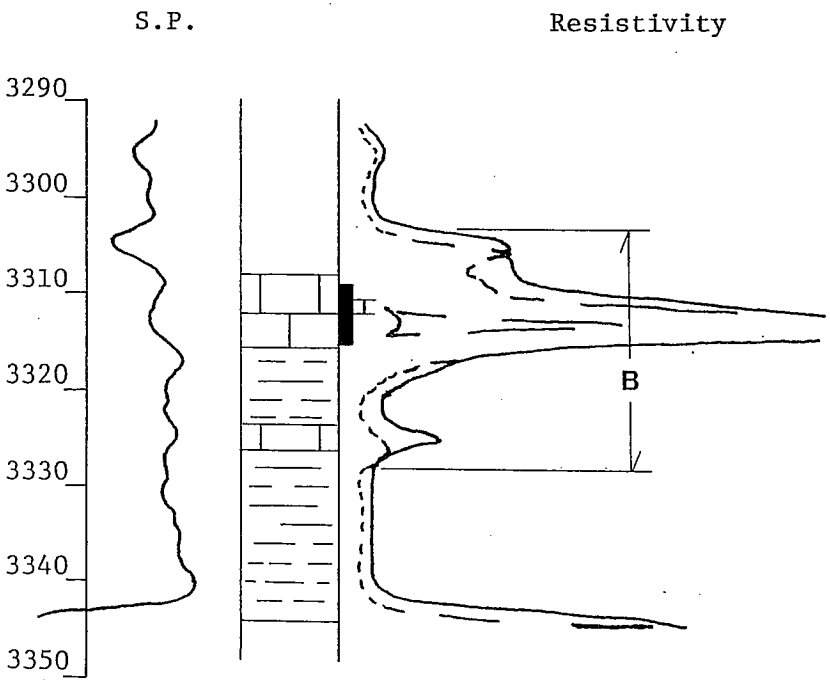
3379-83	Limestone - buff at top, gray at base, slightly argillaceous, slightly fossiliferous and pyritic, hard, tight, no show.
3383-86	Limestone, gray, finely crystalline, hard, tight, no show, abundant irregular partings and streaks of gray, waxy shale.
3386-87	Shale - red, occasionally fossiliferous, hard.
3387-89	Limestone - buff, finely crystalline, fossiliferous, very gray shale partings, hard, tight, no show.
3389-90	Limestone - buff, finely crystalline, argillaceous, hard, tight, no show.

BURCH No. 1 WINTERS, C-NWSE, 27-2N-28W, el. 2666' (K.B.)*



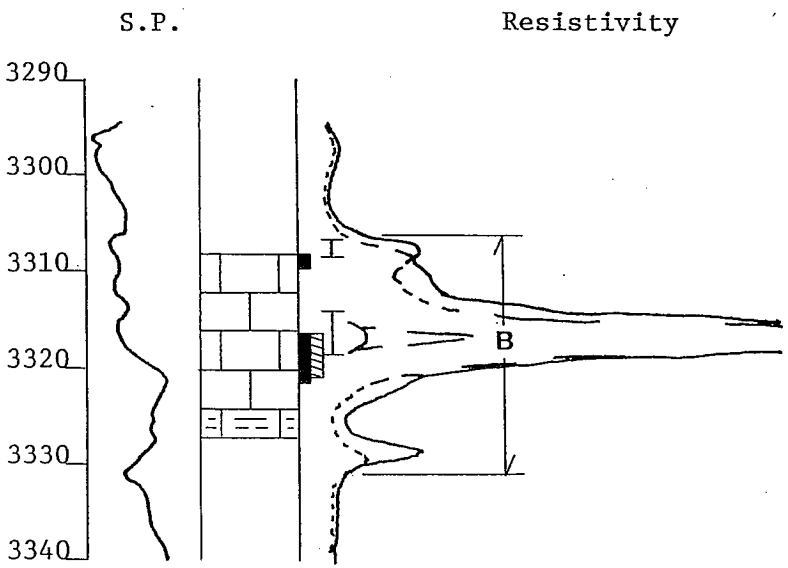
3349-50	Limestone (mudstone) - very pale brown (10YR6/4), partly shaly, hard, tight, with four inches of very slowly bleeding oil, slight pinpoint porosity.
3350-52	Shale - gray (5Y6/1), very slightly silty, calcareous, hard.
3352-57	Limestone (wackestone) - light gray (5Y 7/1), hard, tight, no show, very slightly shaly with irregular and vertical streaks of shale.
3357-62	Limestone (mudstone) - light yellow brown (10YR5/4), small vuggy porosity, bleeding oil.
3362-63	Same but tighter and less bleeding oil.
3363-69	Limestone (wackestone) - gray (10YR6/1), hard, tight, no show, fossiliferous.
3369-71	Shale - weak red (2.5YR4/2), clayey, fossiliferous, very hard, calcareous.
3371-73	Limestone (wackestone) - white (7.5YR8/1), hard, tight, no show, slightly fossiliferous.
3373-74	Limestone (wackestone - gray (5Y6/1), fossiliferous, hard, tight, no show.
3374-78	Shale - weak red (2.5YR4/2), slightly silty, calcareous, hard.

FRONTIER No. B-1 HAAG, C-NENE, 27-2N-28W, el. 2634' (K.B.)



3308-09	Limestone - yellowish gray, reworked, irregularly interbedded with greenish gray shale, hard, tight, no show.
3309-15½	Limestone - gray, reworked, irregularly bedded with greenish gray shale partings, pinpoint to vugular porosity, bleeding oil, no water, vertical fractures.
3215½-23½	Shale - greenish gray, limy with numerous limestone inclusions, this interval becomes progressively more shaly toward base, no show.
3323½-26	Limestone - irregularly bedded, yellowish gray, hard, tight, no show.
3326-44	Shale - brownish red, blocky, no visible bedding.

FRONTIER No. B-2 HAAG, C-NWNE, 27-2N-28W, el. 2636' (K.B.)



3308-09½ Limestone - brown, medium to finely crystalline, slightly argillaceous, mottled with gray shale, slight to fair matrix porosity, evenly bleeding oil except in almost barren bottom six inches.

3309½-16 Limestone - buff to light gray, finely crystalline, slightly fossiliferous, hard, slight vugular porosity, shale blotches and very thin partings abundant in two and half feet of top and bottom one foot.

3316-16½ Limestone - as above, slightly bleeding oil along partings, slight vertical fracture.

3316½-20½ Limestone - buff, medium to finely cyrstalline, firm, fair small vug and crystalline porosity, heavily bleeding oil fairly evenly over the core, bleeding water in fresh break, fair vertical fracture developed throughout.

3320½-21 Limestone - as above, tighter, slight bleeding oil along partings, vertical fracture.

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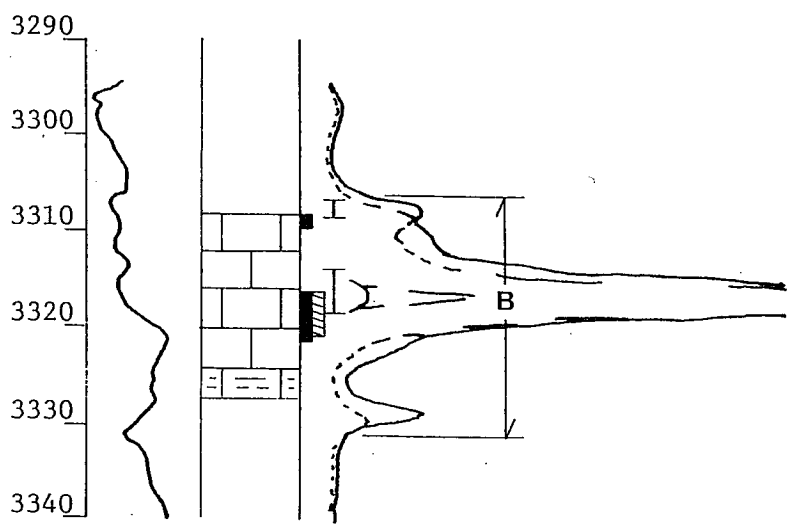

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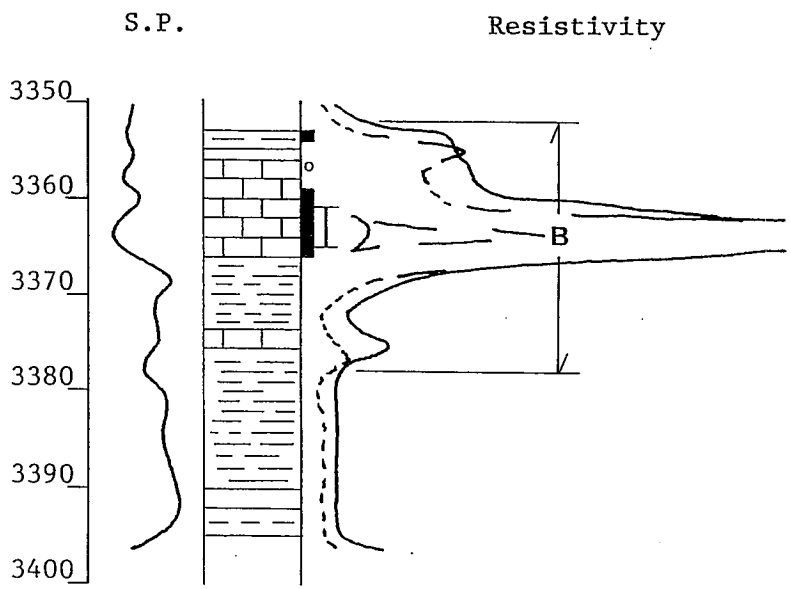
3321-21½ Limestone - buff, as above, hard, tight, no show.

3321½-25 Limestone, light to medium gray, finely crystalline, argillaceous, occasionally pyritic and fossiliferous, hard and tight, no show.

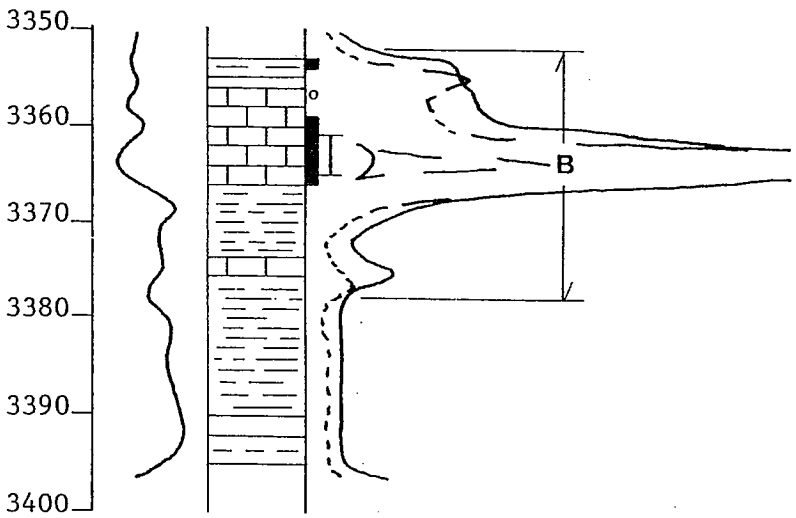
3325-27¼ Limestone - medium gray, finely crystalline, very shaly, fossiliferous, hard, tight, no show, abundant partings and streaks of gray to gray-green fossiliferous limy shale more predominant in bottom.

FRONTIER No. B-3 HAAG, C-SENE, 27-2N-28W, el. 2678' (K.B.)



3353-54	Shale - green, fossiliferous with limestone inclusions, some bleeding oil along breaks.
3354-55	Shale - light green, silky to waxy, limy, fossiliferous with some limestone inclusions, no show.
3355-56	Limestone - light gray, crystalline, tight, hard, fossiliferous, with inclusions of green waxy shale.
3356-57	Limestone - light gray, finely crystalline, dense, tihgt, hard, with scattered splotches of dead black oil.
3357-58	Limestone - as above, no show, few partings of red shale.
3358-59	Limestone - pale green, shaly, very finely crystalline, no show, pyrite lined megafossils.
3359-60	Limestone - limy shale interculated, reworked fossils with bleeding black oil, oil saturated vugular and matrix porosity.
3360-65	Limestone - re-worked, very fossiliferous, oil saturated, good matrix and vugular porosity, heavily bleeding black oil.
3365-66	Limestone - as above, becoming tighter and less oil saturated, vertical fractures, inclusions of large pyrite crystals.

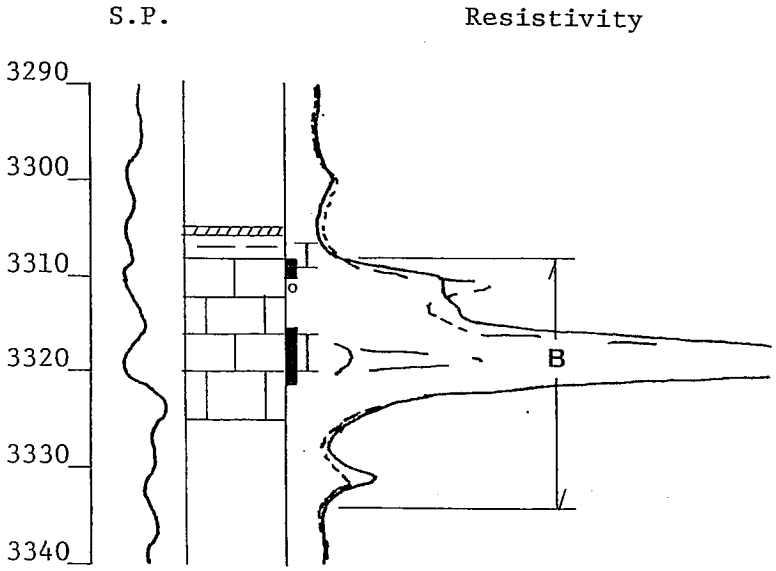
(continued on next page)



(continued from preceding page)

3366-67	Limestone - pale green, very finely crystalline, shaly, dense, tight, no show, slightly fossiliferous, vertical fractures.
3367-70	Shale - pale green, silky, limy, no show, slightly fossiliferous, vertical fractures.
3370-72	Shale - as above, very fossiliferous.
3372-73	Shale - red, silky, fossiliferous.
3373-73½	Shale - pale green, silky, slightly limy, fossiliferous.
3373½-75½	Limestone - light tan, finely crystalline, dense, tight, no show.
3375½-76	Shale - variegated, hard, firm, silky, limy.
3376-90	Shale - dark red, silky, massive, mottled green.

FRONTIER No. B-4 HAAG, C-SWNE, 27-2N-28W, el. 2631' (K.B.)



3305-08	Shale - green to gray, firm, five inches of red shale at top.
3308-10	Limestone - buff, finely crystalline, hard, slight matrix porosity, slowly bleeding oil.
3310-15½	Limestone - light, gray, finely crystalline, hard and tight, few oil stains in top two feet, mottled gray shale and partings in top two feet and bottom one foot.
3315½-21	Limestone - buff, finely crystalline, hard, with fair porosity in small to medium sized vugs, mottled with gray shale, abundant streaks of bleeding oil.
3321-25	Limestone - gray, finely crystalline, hard and tight, argillaceous, fossiliferous, no show.

APPENDIX B

Appendix B presents most of the well log data compiled for this study. These data are offered for their possible value to petroleum operators and others. Well status and field name codes are shown on a foldout sheet at the end of the appendix for easy reference. All asterisks (*) in the table denote estimated values. Any blank entries represent either unavailable or nonapplicable information. Although most of the table headings are self-explanatory, a few of them require some elaboration.

TABLE HEADING	EXPLANATION
IP BOPD	Initial 24-hour B zone production only for wells with single production and an effective B zone thickness.
PROD M/S	"S" indicates single pay zone production; "M" indicates multiple pay zone production
PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	Blank for wells with no B zone production. A question mark (?) indicates an assumed B zone effective thickness in an unlogged well as determined by proximity to logged wells.

FIELD CODES*

AK - Ackman
BC - Bed Canyon
BG - Barger
BS - Base
BT - Bartley
DB 0 Danbury
FD - Fondo
KV - Kevil
LE - Lebanon
MR - Missouri Ridge
MW - Midway
NA - North Ackman
NM - North Midway
NW - Northwest Sleepy Hollow
SC - Silver Creek
SD - South Danbury
SE - School Creek
SH - Sleepy Hollow
SK - Sink
SS - South Silver Creek
PO - Poore
PR - Paupers Ridge
WC - Wildcat
WV - Wolverine
ZN - Zenith

STATUS CODES

AD Abandoned saltwater disposal well
AP Abandoned producer
DA Dry and abandoned
IA Intend to abandon
OW Oil well
TA Temporarily abandoned
WI Water injection
WS Water supply

* Note: These field names appear in the appendix as reported by operators at the time of submission of reports to the Conservation and Survey and do not necessarily correspond to field designations on Plate I. The Nebraska Oil and Gas Conservation Commission determines the official field names. The reader is referred to Plate I for current field designations.

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
1	1	26	C-SENE	Leopold 1	Cabot	DA	WC	2342	3136	20	-794	-	073163	080763	-		
5	1	26	C-SENE	Martin 1	Murfin	DA	WC	2487	3256	18	-769	-	041460	042060	-		
"	"	"	C-SESW	" 1	K. & E.	DA	WC	2472	3222	18	-750	-	041661	042361	-		
6	1	26	C-NENW	Haag 1	Mast & Bale	OW	WC	2533	3266	25	-733	118	122161	092162	S	3267-80	13
"	"	"	C-SWNW	" 2	Bale & S.	OW	WC	2494	3228	27	-734	5	082962	092162	S	3229-40	11
"	"	"	C-NWNE	Kilzer C-1	Burch	AP	SC	2533	3261	27	-728	80	112062	121263	S	3262-77	15
"	"	"	C-SWNE	" C-2	"	DA	LE	2527	3271	27	-744	-	121662	122962	-		
"	"	"	C-NENE	" C-3	"& Morris	DA	SC	2518	3258	27	-740	-	012463	020263	-		
7	1	26	C-SWNE	Steinmetz 1	Burch	DA	WC	2457	3210	19	-753	-	112863	120463	-		
10	1	26	C-NWNW	Lomax 1	Gaddis	DA	WC	2459	3264	17	-805	-	111163	111763	-		
11	1	26	C-NENE	Graton 1	Airway	DA	WC	2353	3155	18	-802	-	052561	060261	-		
12	1	26	C-SWSW	Boyd 1	Tipps	DA	WC	2495	3301	18	-806	-	123060	010761	-		
15	1	26	C-NWNW	Daffer 1	Dreiling	DA	WC	2387	3203	19	-816	-	081167	081767	-		
20	1	26	C-NWSW	" 1	Platte Val.	DA	WC	2471	3279	22	-808	-	062869	070669	-		
21	1	26	SENW	Townsend 1	Sauvage	DA	WC	2481	----	--	----	-	080261	080961	-		
"	"	"	C-NWNWNW	" 1	Vicron	DA	WC	2467	3278	18	-811	-	042257	050257	-		
23	1	26	NENW	Taylor 1	Brinkerhoff	DA	WC	2501	3327	27	-826	-	083061	090361	-		
25	1	26	C-SWSW	Macy 1	Platte Val.	OW	LE	2549	3367	21	-818	25	051671	071571	M	3368-72	4
"	"	"	C-SWNE	Naviaux A-1	Slawson	OW	WC	2527	----	--	----	50	081270	111270	S		
"	"	"	SWNW	Welborn 1	Platte Val.	DA	WC	2535	3366	18	-831	-	081772	082872	-		
26	1	26	NWSW	Devoe 1	" "	DA	WC	2542	3361	19	-819	-	121871	123071	-		
27	1	26	SWNW	Macy 1	Cen. State	DA	WC	2497	3323	18	-826	-	060169	061269	-		
29	1	26	C-NESE	Lomax 1	Carter	DA	WC	2524	3338	20	-814	-	081761	082561	-		
31	1	26	C-SWNW	Warner 1	Burch	DA	WC	2584	3328	26	-744	-	120363	121363	-		
32	1	26	SWSE	Haag 1	Platte Val.	DA	WC	2559	3383	21	-824	-	090569	091369	-		
33	1	26	SESW	Townsend 1	" "	DA	WC	2528	3345	19	-817	-	071769	073169	-		
34	1	26	C-SWSW	Huff 1	" "	DA	WC	2560	3384	19	-824	-	030171	031271	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
34	1	26	C-NWSE	Warner 1	Akmar	DA	WC	2555	----	--	----	-	112469	120269	-		
"	"	"	C-SENE	" 1	Sauvage	DA	WC	2528	3353	17	-825	-	042961	080961	-		
35	1	26	C-SENW	Kilzer 1	"	DA	WC	2560	3379	20	-819	-	062861	070561	-		
36	1	26	C-NENW	State A-1	Slawson	OW	WC	2521	3339	21	-818	50	091370	111270	M		
1	1	27	C-SWNE	Gay 1	Burch	OW	WC	2504	3244	26	-740	30	042762	061562	S	3246-56	10
"	"	"	SENW	Thomas 1	Tenneco	AP	SC	2458	3199	28	-741	10	111562	120762	S	3202-14	12
"	"	"	C-NESE	Weathermax 1	Globe	DA	SC	2496	3235	27	-739	-	102673	110173	-		
2	1	27	NWNW	Dutton 1	Taylor	OW	MR	2513	----	--	----	20	020871	050371	S		
"	"	"	C-SWNW	" 1	Diamond	OW	MR	2531	3260	27	-729	28	092474	111674	S	3270-74	4
"	"	"	NENW	" 2	Diam., J.&C.	DA	MR	2564	3292	26	-728	-	122075	010576	-		
"	"	"	C-SESW	Harris 1	Burch	DA	WC	2519	3253	26	-734	-	052560	060460	-		
"	"	"	C-SWNE	Thomas 1	Indigo	DA	MR	2569	3313	27	-744	-	011875	012875	-		
3	1	27	C-NENE	Breach 1	Taylor	OW	NM	2571	3286	26	-715	70	122164	010665	S	3288-98	10
"	"	"	SENE	" A-1	"	OW	NM	2558	3263	23	-705	100	101772	113072	M	3270-81	11
"	"	"	NENW	Kircher 1	Coleman	OW	NM	2578	3288	26	-710	87	041565	042965	S	3297½-02	4½
"	"	"	C-SWSE	Lueke 1	McCollum	OW	NM	2543	3272	28	-729	96	041564	042764	S	3275-87	12
"	"	"	C-NWSE	" 2	"	OW	NW	2549	3283	27	-734	75	050764	051864	S	3285-98	13
"	"	"	SESW	Remington 1	"	OW	NW	2516	3250	28	-734	93	082364	091464	S	3252-64	12
4	1	27	C-SENW	Kircher 1	Empire	OW	DB	2533	3243	25	-710	90	060772	062272	S	3243-47/3252-58	10
"	"	"	C-SWNE	" 2	"	OW	DB	2539	3252	26	-713	100	071972	072972	S	3251-55/3260-66	10
"	"	"	NWNE	" 3	"	OW	DB	2552	3266	25	-714	102	090672	092072	S	3273-79	6
"	"	"	C-SWSW	Leibbrandt 1	"	OW	DB	2532	3236	27	-704	50	022871	031271	S	3237-43	6
"	"	"	C-SESW	" 2	"	OW	DB	2465	3166	28	-701	55	081171	083071	M	3168-80	12
"	"	"	C-NESW	" 3	"	OW	DB	2483	3181	26	-698	75	030372	032072	S	3182-96	14
"	"	"	NWSW	" 4	"	OW	DB	2523	3226	28	-703	75	051672	060372	S	3236-42	6
"	"	"	C-SWSE	" 5	"	OW	DB	2518	3212	26	-694	70	072672	080972	S	3212-14/3220-26	8
"	"	"	C-NWSE	" 6	"	OW	DB	2542	3241	27	-699	100	081872	090772	S	3249-55	6

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
4	1	27	SENE	Leibbrandt 7	Empire	DA	DB	2484	3194	23	-710	-	091372	091872	-		
"	"	"	C-SENE	" 1	Taylor	DA	WC	2486	3195	25	-709	-	121664	112265	-		
"	"	"	C-SESE	Remington B-1	Empire	OW	NM	2493	3190	28	-697	100	111772	113072	S	3192-96/3200-06	10
"	"	"	NESE	" B-2	"	OW	DB	2492	3194	26	-702	60	112572	120772	S	3202-09	7
5	1	27	C-SWSW	Hindman 1	Nebr. Drls.	DA	WC	2555	3270	24	-715	-	011061	011861	-		
"	"	"	C-SESE	Macy B-1	Empire	OW	DB	2539	3244	26	-705	36	052271	060471	S	3250-60	10
7	1	27	SESW	Kuper 1	Burch	DA	WC	2534	3257	26	-723	-	052461	060361	-		
"	"	"	C-NENW	" 2	"	DA	WC	2583	3309	26	-726	-	120561	121261	-		
8	1	27	C-NESE	Henton B-1	Empire	OW	DB	2464	3166	28	-702	50	120172	121172	S	3179-85	6
"	"	"	C-NENE	Macy 1	"	OW	DB	2520	3222	25	-702	70	031771	040571	S	3225-34	9
"	"	"	SWNW	Messner 5-8	Husky	DA	WC	2509	3228	26	-719	-	050474	051072	-		
9	1	27	NESW	Henton 1	Empire	OW	DB	2493	3238	25	-745	88	053072	061372	S	3246-52	6
"	"	"	C-NWSW	" 2	"	OW	DB	2490	3186	26	-696	60	083172	091472	S	3194-00	6
"	"	"	C-NWNW	Remington 1	"	OW	WC	2526	3225	29	-699	68	100670	102070	S		
"	"	"	C-SWNW	" 2	"	OW	DB	2516	3222	27	-706	96	021871	031071	S	3223-29	6
"	"	"	C-NENW	" 3	"	OW	DB	2512	3204	28	-692	65	031372	033072	S	3205-20	15
"	"	"	SENW	" 4	"	OW	DB	2508	3205	27	-697	60	042772	051072	S	3210-20	10
"	"	"	NWNE	McBride 1	"	OW	DB	2480	3172	28	-692	100	071272	072872	S	3172-76/3182-88	10
"	"	"	NENE	" 2	"	OW	DB	2505	3218	26	-713	124	110772	112272	S	3216-31	15
"	"	"	C-SWNE	" 3	"	OW	DB	2496	3211	28	-715	30	032173	041073	S	3221-27	6
10	1	27	C-SWNE	" 1	Burch	OW	NM	2494	3226	28	-732	100	090563	092663	S	3230-42	12
"	"	"	SENE	" 2	"	DA	NM	2506	3240	21	-734	-	102863	110363	-		
"	"	"	C-NENW	" B-1	"	DA	NM	2502	3241	20	-739	-	121863	123063	-		
"	"	"	NWNE	" 3	"	OW	NM	2523	3251	27	-728	80	110463	112063	S	3253-67	14
"	"	"	C-NESE	Messner 1	"	OW	WC	2455	3178	27	-723	147	042363	043063	S	3179-93	14
"	"	"	C-NWSE	" 2	"	OW	NM	2438	3168	27	-730	80	102163	110663	S	3170-83	13
"	"	"	C-NESW	" B-1	"	OW	NM	2439	3170	25	-731	40	031864	111564	S	3171-82	11

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
10	1	27	C-SESW	Messner B-2	Murfin	OW	MW	2436	3162	24	-726	10	010475	032575	S	3162-65/3167-68	
--	-	--	--------	----------	----------	--	--	----	----	--	----	-	------	------	-	3169-74	9
"	"	"	C-SWSE	Townley 2	Empire	OW	MW	2433	3154	--	-721	20	062674	070274	S	3155-59/3164-70	10
"	"	"	C-SESE	" 3	"	OW	NM	2428	3152	--	-724	48	040875	042575	S	3152-56/3160-66	10
11	1	27	SWNW	Harris 1	Taylor	DA	NM	2500	3229	22	-729	-	111263	111763	-		
"	"	"	C-NWSW	Walters 1	Gallatin	OW	NM	2464	3186	26	-722	45	092563	101763	M	3186-00	14
"	"	"	C-SWSW	" A-1	Diam., J.&C.	OW	NM	2423	3152	28	-729	43	082575	092775	S	3164½-69½	5
"	"	"	C-SWSE	Nicholson 2	Farmer	OW	NM	2420	3151	29	-731	20	071274	071774	S	3151-54/3162-66	7
12	1	27	C-SWSW	" 1	"	DA	WC	2418	3154	27	-736	-	111874	010875	-		
"	"	"	SWSW	" 4	"	OW	NM	2423	3158	--	-735	30	052375	053175	S	3158-60/3166-70	6
"	"	"	C-SWNE	Weathermax 1	Empire	DA	WC	2459	3204	28	-745	-	081869	082569	-		
13	1	27	C-SENE	Halsey 1	Far West	DA	WC	2411	3173	22	-762	-	030161	030861	-		
"	"	"	SWNW	Nicholson 6	Farmer	DA	MW	2425	-----	--	-----	-	062876	070376	-		
14	1	27	C-NENE	" 3	"	OW	WC	2427	3159	28	-732	25	111174	113074	S	3157-73	16
"	"	"	C-SWNE	" 5	"	OW	MW	2425	3158	23	-733	35	060175	062075	S	3157-60/3165-70	8
"	"	"	C-NWNE	" 7	"	OW	MW	2422	3154	26	-732	25	062176	062676	S	3154-57/3162-67	6
"	"	"	C-SWSW	Poole 1	Frontier	DA	MW	2480	3199	24	-719	-	071561	072061	-		
"	"	"	C-NWNW	Springer 1	Empire	OW	MW	2426	3153	--	-727	50	032775	041675	S	3155-59/3162-68	8
"	"	"	C-SWNW	" 2	"	OW	MW	2434	-----	--	-----	70	062775	070275	S	3157-61/3165-71	10?
"	"	"	NENW	" 3	"	OW	MW	2426	3151	24	-725	68	111475	121275	S	3151-57/3159-65	12
"	"	"	C-SENW	" 4	"	OW	MW	2420	3147	25	-727	100	110875	112975	S	3147-53/3156-62	12
15	1	27	C-SWNE	Nicholson 1	"	OW	MW	2432	3160	29	-728	75	071473	072873	S	3169-75	6
"	"	"	C-SENE	" 2	"	OW	MW	2432	3159	--	-727	75	110773	112873	S	3169-75	6
"	"	"	C-SENW	" 3	"	OW	MW	2438	3168	29	-730	20	051674	060674	S	3168-72/3178-84	10
"	"	"	C-SWNW	" 4	"	OW	MW	2478	3204	--	-726	15	070674	071174	S	3204-08/3211-17	10
"	"	"	C-NENW	Parker 1	"	OW	MW	2429	3148	27	-719	24	041774	050874	S	3148-63	15
"	"	"	C-NWNW	" 2	"	OW	MW	2433	3161	27	-728	20	062074	062574	S	3161-65/3170-76	10

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
15	1	27	C-SESE	Sullivan 1	Texaco	OW	MW	2546	3261	26	-715	34	100661	102161	S	3261-75/3281-83	16
"	"	"	C-NWSE	" 2	"	OW	MW	2487	3213	27	-726	37	032362	040662	S	3214-29	15
"	"	"	C-SWSE	Thomas 1	Burch	AP	MW	2499	3220	25	-721	86	111861	010862	S	3221-23/3228-33	7
"	"	"	C-NWNE	Townley 1	Empire	OW	MW	2431	3154	29	-723	43	030474	032174	S	3153-58/3164-70	11
"	"	"	C-NENE	" 4	"	OW	MW	2427	3151	25	-724	40	070375	071875	S	3152-54/3158-64	8
16	1	27	C-SESE	Remington 1	Cont. & W.	DA	WC	2520	3250	27	-730	-	060861	061661	-		
"	"	"	C-SENE	Cumming 1	Empire	DA	MW	2460	----	--	-----	-	062175	062775	-		
17	1	27	C-SENW	Morgan 1	Burch	DA	WC	2449	3210	28	-761	-	070860	071760	-		
18	1	27	C-NWSE	Danbury 1-2	Empire	OW	SD	2455	3152	28	-697	-	061471	070171	M		
"	"	"	C-SWNE	" 1-3	"	DA	SD	2451	3159	27	-708	-	060771	061271	-		
"	"	"	C-SENW	" 1-4	"	OW	SD	2463	3168	28	-705	51	052871	060671	M	3176-84	8
"	"	"	C-SWSE	" U. 2	"	DA	DB	2455	3152	28	-697	-	122774	010275	-		
"	"	"	C-NESW	Simonsen 1	"	OW	WC	2455	3152	28	-697	160	030871	032171	S		
"	"	"	C-SESW	" 2	"	OW	SD	2458	3151	27	-693	30	081971	092071	M	3152-64	12
"	"	"	C-SWSW	" 3	"	DA	SD	2460	----	--	----	-	040573	041473	-		
21	1	27	NESW	Lord 1	Platte Val.	DA	WC	2574	3310	30	-736	-	122766	010767	-		
22	1	27	C-NESE	Springer 1	Sterling	AP	MW	2566	3271	29	-705	120	082266	090262	S	3274-88	14
"	"	"	C-NWNE	" 3	Texaco	WI	MW	2508	3223	29	-715	38	062862	071462	S	3224-28/3231-39	12
"	"	"	C-SESW	Thomas A-3	Cities Svc.	WI	MW	2533	3241	29	-708	98	122063	011164	S		
"	"	"	C-SENE	Springer 1	K. & E.	OW	MW	2547	3257	28	-710	129	012462	020962	S	3268-72	4
"	"	"	C-NWSE	" 2	Ballard	WI	MW	2539	3246	29	-707	90	101462	101962	S	3247-61	14
"	"	"	C-SWNE	" 2	K. & E.	OW	MW	2460	3170	29	-710	97	021062	022562	S	3171-86	15
"	"	"	C-SESE	" 3	Sterling	OW	MW	2529	3236	28	-707	35	021363	021963	S	3238-52	14
"	"	"	C-SWSE	" 4	"	OW	MW	2550	3256	30	-706	74	071263	071863	M	3258-72	14
"	"	"	NENE	" 41-22	Superior	OW	MW	2556	3263	29	-707	110	051061	060161	S	3264-67/3272-79	10
23	1	27	C-NWSE	Axtel 1	K. & E.	OW	MW	2526	3254	28	-728	82	102161	110961	S	3256-58/3262-68	8
"	"	"	C-NESW	" A-1	"	OW	MW	2550	3261	35	-711	104	110561	111461	S	3261-82	21

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
23	1	27	C-SESW	Axtel A-2	K. & E.	OW	MW	2573	3296	31	-723	96	111861	122261	S	3297-00/3310-13	6
"	"	"	C-NESE	" A-3	"	DA	MW	2455	3191	25	-736	-	022662	030462	-		
"	"	"	C-SWSE	" 2	"	WI	MW	2529	3259	25	-730	68	112461	123061	S	3260-71	11
"	"	"	C-SWNE	H. Boyd 1	"	OW	MW	2518	3241	37	-723	127	111261	112661	S	3242-62	20
"	"	"	C-SENW	" 1	Franco	DA	MW	2529	3252	28	-723	-	030562	031162	-		
"	"	"	C-SWNW	" 2	K. & E.	OW	MW	2537	3244	29	-707	80	102961	111061	S	3244-45/3252-60	9
"	"	"	C-NWSW	Sullivan 1	Texaco	OW	MW	2565	3277	29	-712	121	031662	040162	M	3278-94	16
"	"	"	C-NWNW	Boyd 1	K. & E.	WI	WC	2503	3213	27	-710	110	022861	031861	S	3214-16/3221-26	7
"	"	"	C-NWNE	H. " 2	"	WI	MW	2509	3233	31	-724	54	011762	012762	S	3237-40/3246-50	7
"	"	"	C-SWSW	Sullivan 2	Texaco	WI	MW	2486	3295	31	-709	57	033062	041162	M	3295-98/3302-14	15
25	1	27	C-SESW	Matheny 1	Pet. Manag.	OW	WC	2530	3260	27	-730	55	070268	090468	M	3263	1
"	"	"	C-NWNWSE	Townsend 1	Dunn & S.	DA	WC	2529	3257	27	-728	-	080356	081256	-		
27	1	27	C-SESW	Axtel 1	Farmer	DA	SK	2575	----	--	---	-	033066	040666	-		
"	"	"	C-NENE	Thomas A-1	Cities Svc.	WI	MW	2584	3292	28	-708	214	051863	052663	S	3288-94/3299-03	10
"	"	"	SWNE	" A-2	" "	OW	MW	2523	3228	28	-705	35	070663	071563	S	3228-34/3238-42	10
"	"	"	C-SESE	Witt 1	Farmer	OW	SK	2566	3272	--	-706	108	030866	032066	S	3276-86	10
33	1	27	C-NWNE	Martin 1	Christie S.	DA	WC	2553	3271	29	-718	-	071462	072162	-		
"	"	"	NWNWNW	Moyer 1	Kay	DA	WC	2546	3290	29	-744	-	090954	091954	-		
34	1	27	C-SENW	Osburn 1	Farmer	OW	WC	2605	3303	30	-698	90	030865	032065	S	3305-09	4
"	"	"	C-NWSW	" B-1	"	DA	SK	2621	----	--	----	3	110874	110974	M	3336-39	3?
"	"	"	NWSW	" 1	Hewit	DA	SK	2621	3320	35	-699	-	121766	122366	-		
"	"	"	C-NWNE	Thomas 1	Farmer	OW	SK	2564	----	--	----	42	022066	022566	S	3265-80	15?
"	"	"	C-NWSE	" 2	"	OW	SK	2587	----	--	----	100	080567	082167	S	3296-05	9?
"	"	"	C-SESE	" 3	"	OW	SK	2645	----	--	----	35	111067	121967	S	3364-68	4?
"	"	"	C-SENE	" 4	"	OW	SK	2579	----	--	----	35	111667	121967	S	3280-90	10?
"	"	"	C-SESW	Osburn 2	Hewit	DA	SK	2635	3336	--	-701	-	030168	030668	-		
35	1	27	C-NWSW	Thomas B-1	Farmer	OW	SK	2610	3336	--	-726	2.5	022368	031868	S	3343-46	3

SEC	T N	R W	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
35	1	27	C-NESE	Thomas 1	Pet. Manag.	OW	WC	2600	----	--	-----	40	030569	051069	S	3328-34	6?
"	"	"	C-NWNW	Witt 3	Farmer	OW	SK	2583	3298	--	-715	16	122870	021771	S	3301-15	14
"	"	"	C-SENW	" 2	"	DA	WC	2534	3254	26	-720	-	092567	093067	-		
36	1	27	C-NENW	Warner 1	Pet. Manag.	OW	WC	2567	3289	27	-722	135	060568	071368	M	3291-95	4
"	"	"	SESWSE	" 1	Grt. Basins	DA	WC	2624	3348	28	-724	-	040657	041657	-		
"	"	"	C-SENW	" 2	Pet. Manag.	WI	BS	2594	3315	28	-721	-	022269	022869	S		
"	"	"	C-NWNW	Warner 3	Pet. Manag.	DA	BS	2565	3284	27	-719	-	062069	062669	-		
1	1	28	C-SWSW	Poole 1	Walker	DA	ZN	2628	3335	24	-707	-	070562	071262	-		
2	1	28	C-NENE	Ryan 1	Pet. Manag.	OW	WC	2666	3361	24	-695	-	101568	101768	M	3361-65/3371-74	7
"	"	"	C-NWNE	" 2	"	WI	KV	2641	3341	27	-700	-	060769	070869	-		
3	1	28	C-NWSW	Reiners 1	K. & E.	DA	WC	2658	3412	24	-745	-	110760	111360	-		
8	1	28	C-SWSW	Nieweg 1	Duncan	DA	WC	2664	3478	23	-814	-	092361	092861	-		
11	1	28	C-NENE	Messinger 1	Midwest E.	DA	WC	2605	3313	27	-708	-	072475	073175	-		
"	"	"	C-SWSW	Puelz 1	Rutl. & C.	DA	WC	2610	3343	25	-733	-	071368	071968	-		
12	1	28	C-NENW	Bastian B-1	K. & E.	OW	WC	2601	3312	26	-711	44	060961	062461	S	3313-25	12
"	"	"	C-NWNE	Cantrall 1	Burch	DA	ZN	2613	3322	26	-709	-	102961	110661	-		
12	1	28	C-NESW	Haag 1	Rutl. etal.	DA	WC	2571	3288	30	-717	-	092069	100669	-		
13	1	28	C-NWSE	Gallatin 1	Geochemical	DA	WC	2498	3215	26	-717	-	011762	022363	-		
16	1	28	C-NWSE	Lofferty 1	Rutl. etal.	DA	WC	2566	3386	26	-820	-	090768	091368	-		
19	1	28	C-NESW	Musgrave 1	Hick. etal.	DA	WC	2572	3459	29	-887	-	032461	033161	-		
20	1	28	C-NWSE	Martin 1	Strata	DA	WC	2624	3478	26	-854	-	050861	051661	-		
23	1	28	SWNW	Bastian 1	Platte Val.	DA	WC	2558	3317	24	-759	-	041072	041972	-		
24	1	28	C-NWNWSW	Gallatin 1	Volentine	DA	WC	2483	3214	26	-731	-	080557	081357	-		
25	1	28	C-SWNE	Young 1	Frontier	DA	WC	2497	3221	27	-724	-	091261	091761	-		
26	1	28	C-SENW	Ashton 1	Coleman	AP	WC	2475	3255	27	-780	2	021466	031666	S	3260½-65½	5
34	1	28	NENW	Johnson 1	Stay, J.&.S.	DA	WC	2525	3341	30	-816	-	070770	071770	-		
36	1	28	C-NENE	State 1	K. & E.	DA	WC	2593	3394	29	-801	-	050361	051061	-		

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1	1	29	C-SWSW	Deitcher 1	Simons & S.	DA	WC	2715	3575	24	-860	-	020566	021266	-		
6	1	29	C-NWSE	Geibsler 1	K. & E.	DA	WC	2657	3664	25	1007	-	092261	092961	-		
14	1	29	C-NENENE	Campbell 1	Gilbert	DA	WC	2718	3611	24	-893	-	100156	100756	-		
18	1	29	C-NWNESW	Wilhelm 1	"	DA	WC	2757	3779	23	1022	-	072556	080556	-		
21	1	29	C-NWNW	Lofton 1	Burch	DA	WC	2718	3729	27	1011	-	101860	102860	-		
"	"	"	NENE	" 1	Producers	DA	WC	2731	3727	34	-996	-	122765	010766	-		
26	1	29	C-SWNW	Hawkins 1	Sauvage	DA	WC	2706	----	--	----	-	061862	062662	-		
27	1	29	SESE	Messinger 1	IONEB	DA	WC	2698	----	--	----	-	102567	110867	-		
"	"	"	C-SESENE	Randel 1	Betts etal.	DA	WC	2710	----	--	----	-	091254	092454	-		
32	1	29	SESE	Berndt 1	Producers	DA	WC	2694	3694	26	1000	-	050166	081566	-		
33	1	29	C-SENW	" 1	Kennec	DA	WC	2655	----	--	----	-	040567	061567	-		
"	"	"	NWNW	" 2	"	AP	WC	----	----	--	----	34	022268	033068	S		
33	1	29	C-SWSW	Dunn 1	Prod. & Mur	AP	WC	2661	3658	25	-997	32	082765	011766	S	3661-64	3
34	1	29	C-NWNW	Messinger 1	Sauvage	DA	WC	2692	3667	23	-975	-	040960	041760	-		
"	"	"	C-NWSE	Cohen 1	Jennings	DA	WC	2642	----	--	----	-	070776	071476	-		
2	1	30	C-SESE	Amen 1	Taylor	DA	WC	2730	3752	26	1022	-	111669	112869	-		
"	"	"	C-SWSW	Longnecker 1	Christie S.	DA	WC	2713	3741	15	1028	-	070362	071362	-		
6	1	30	C-SWSW	Holst 1	Empire	DA	WC	2816	----	--	----	-	101367	102367	-		
8	1	30	C-NENW	Ross 1	Pet. Manag.	DA	WC	2824	3852	12	1028	-	052768	060368	-		
9	1	30	C-SESE	Crocker 1	Christie S.	DA	WC	2836	3868	21	1032	-	062262	070162	-		
13	1	30	C-NWNW	Goetl 1	Leben	DA	WC	2720	3750	23	1030	-	053060	061160	-		
16	1	30	C-NWNW	State 1	Murfin & B.	DA	WC	2788	3804	20	1016	-	042361	050261	-		
17	1	30	SWSW	Pennock P. 1	J.&C.&St.	DA	WC	2754	3790	16	1036	-	100673	101873	-		
21	1	30	C-NWSWNW	Leitner 1	Vol. & Robt	DA	WC	2860	3888	21	1028	-	053059	061159	-		
23	1	30	C-SENW	Hawkins 1	Graybol	DA	WC	2822	3857	23	1035	-	071363	072263	-		
35	1	30	C-NWSW	Leitner 1	Murfin & B.	DA	WC	2829	3873	25	1044	-	032561	040461	-		
1	2	26	C-SWSW	Ruf 1	K.& E.	DA	WC	2510	3193	24	-683	-	021961	022561	-		

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2	2	26	C-SWNE	Warner 1	Platte Val.	DA	WC	2490	3168	25	-678	-	070863	071463	-		
3	2	26	C-SESW	Sughroue 1	Man Jr.	DA	WC	2493	3183	23	-690	-	103161	110861	-		
4	2	26	SWNE	" 1	Strata	DA	WC	2503	3215	25	-712	-	102076	102776	-		
6	2	26	C-NESE	Moore 1	Burns etal.	DA	WC	2475	3198	23	-723	-	080561	081161	-		
7	2	26	C-SWSW	Harsch 10	Texaco	OW	SC	2516	3230	23	-714	145	080861	082061	S	3236-42	6
"	"	"	C-SESW	" 13	"	OW	SC	2502	3227	23	-725	202	112161	120961	S	3228-31/3233-38	8
"	"	"	C-SWSE	" 15	"	OW	SC	2534	3262	23	-728	129	012262	021162	S	3263-72	9
"	"	"	C-SESE	" 16	"	DA	SC	2558	3286	24	-728	-	020262	021662	-		
"	"	"	C-NESW	" 21	"	AP	SC	2471	3193	23	-722	164	061662	070562	S	3193-02	9
"	"	"	NESE	" 27	"	AP	SC	2538	3268	23	-730	69	111062	112462	S	3268-78	10
"	"	"	NWSE	" 28	"	OW	SC	2498	3226	22	-728	151	122862	010963	S	3231-36	5
"	"	"	C-SWNE	Troester 1	Sunray	DA	WC	2537	3265	24	-728	-	052761	060361	-		
"	"	"	NWSW	Harsch 23	Texaco	WI	SC	2506	3231	23	-725	111	062262	070662	S	3232-42	10
"	"	"	C-SENW	Troester 2	Sunray	WI	SC	2474	3204	25	-730	-	110762	111962	-		
8	2	26	NWNW	" 7	Tenneco	DA	SC	2496	3222	21	-726	-	010863	011463	-		
"	"	"	C-NWSW	" 5	"	OW	SC	2530	3251	22	-721	61	090662	101262	S	3251-60	9
"	"	"	C-NESW	" 4	"	OW	SC	2509	3232	23	-723	109	082962	091662	S	3234-42	8
"	"	"	C-SESW	" 3	"	OW	SC	2492	3221	23	-729	94	082062	090862	M	3223-31	8
"	"	"	C-SWSW	" 2	"	OW	SC	2546	3277	23	-731	120	072562	081562	M	3276-86	10
"	"	"	C-SWNE	Schaffert 1	Leslie & P.	DA	SC	2462	3187	22	-725	-	112862	120462	-		
"	"	"	SWSE	Harsch 1	Baumgartner	OW	SC	2527	3252	22	-725	71	040563	050463	S	3252-61	9
"	"	"	C-SENW	Troester 1	Tennessee	DA	WC	2518	3243	22	-725	-	081960	082760	-		
"	"	"	C-NWSE	Harsch 1	Murfin	WI	SC	2511	3237	23	-726	96	012063	012763	S	3238-46	8
"	"	"	SWNW	Troester 6	Tenneco	WI	SC	2506	3233	22	-727	102	112162	121062	S	3233-41	8
9	2	26	C-SWSW	McMahon 1	Pl. V. & B.	WI	SC	2516	3258	16	-742	-	100264	100864	-		
13	2	26	C-SESE	Lemaster 1	Plymouth	DA	WC	2500	3244	20	-744	-	102260	102860	-		
15	2	26	C-NENE	McMahon 1	Alp. etal.	DA	WC	2544	3260	24	-766	-	121662	122262	-		

SEC	T N	R W	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
15	2	26	C-SWSE	Sammons 1	Simcox & A.	DA	WC	2454	3186	24	-732	-	102263	102863	-		
16	2	26	C-NWSW	Sin. State 1	Lewis etal.	DA	WC	2486	3224	24	-738	-	062861	070561	-		
17	2	26	SWSE	Burton 1	Hansen	DA	SC	2579	-----	--	-----	-	091062	091862	-		
"	"	"	C-SWNE	Harsch 1	Huber	DA	SC	2571	3312	20	-741	-	080762	081462	-		
"	"	"	SWNW	" 17	Texaco	OW	SC	2558	3289	25	-731	113	020962	030462	S	3289-00	11
"	"	"	C-NWSW	" 18	"	OW	SC	2580	3314	22	-734	126	021662	030662	S	3316-22	6
"	"	"	C-SWSW	" 19	"	OW	SC	2591	3320	24	-729	122	022362	030862	S	3321-32	11
"	"	"	C-SENW	" 20	"	OW	SC	2511	3250	25	-739	156	053162	061562	S	3251-61	10
"	"	"	C-NWNW	" 22	"	OW	SC	2533	3263	23	-730	180	061062	062662	S	3263-74	11
"	"	"	C-NESW	" 24	"	WI	SC	2531	3263	24	-732	30	070662	072162	S	3264-67/3271-75	7
"	"	"	NENW	" 25	"	OW	SC	2502	3230	24	-728	132	071262	072662	S	3230-40	10
"	"	"	C-SESW	" 26	"	OW	SC	2543	3278	23	-735	38	072562	080962	S	3279-90	11
"	"	"	C-NWNE	" B-1	Murfin	WI	SC	2555	3283	23	-728	120	061363	061963	S	3289-90	1
18	2	26	SWSW	" 1	Texaco	OW	SC	2531	3252	25	-721	192	012261	020861	M	3252-54/3260-64	6
"	"	"	C-NWSW	" 2	"	WI	SC	2547	3274	23	-727	220	031761	033061	M	3275-83	8
"	"	"	NESW	" 3	"	OW	SC	2571	3302	25	-731	216	040461	041761	M	3306-17	11
"	"	"	SENW	" 4	"	OW	SC	2518	3245	23	-727	171	041961	050761	M	3245-48/3251-56	8
"	"	"	SWNW	" 5	"	OW	SC	2527	3251	23	-724	197	051161	052861	S	3252-63	11
"	"	"	SWNE	" 6	"	OW	SC	2579	3304	25	-725	192	052561	060661	S	3306-17/3325-29	15
"	"	"	C-NWNW	" 7	"	WI	SC	2523	3245	24	-722	208	060161	061561	S	3246-57/3264-68	15
"	"	"	C-NENW	" 8	"	OW	SC	2526	3248	23	-722	210	062961	070561	S	3248-51/3254-58	7
"	"	"	SESW	" 9	"	WI	SC	2598	3327	26	-729	195	060961	062561	M	3327-31/3336-41	5
"	"	"	C-NWNE	" 11	"	OW	SC	2570	3290	22	-720	168	082661	090861	S	3290-96/3298-01	9
"	"	"	C-SENE	" 12	"	OW	SC	2575	3299	24	-724	194	090661	091761	S	3299-04/3306-11	10
"	"	"	C-NENE	" 14	"	OW	SC	2565	3291	24	-726	126	013162	013162	S	3292-95/3298-02	7
"	"	"	NWSE	McConahay 1	"	OW	SC	2536	3266	25	-730	210	050161	051261	S	3270-80	10
"	"	"	C-SWSE	" 2	"	OW	SC	2592	3318	26	-726	172	062361	062961	S	3318-23/3326-30	9

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
18	2	26	C-NESE	Mc. & Harsch 1	Texaco	OW	SC	2599	3326	25	-727	197	081661	090161	S	3333-38	5
"	"	"	C-SESE	" " 2	"	OW	SC	2607	3343	24	-736	182	103161	111361	S	3350-56	6
19	2	26	NWNW	Haag A-1	Burch	OW	SC	2548	----	--	----	73	101764	122864	S		
"	"	"	NWNW	" 1	"	OW	SC	2545	3269	26	-724	200	031461	061461	S	3276-82	6
"	"	"	C-NENW	" 2	"	OW	SC	2608	3337	26	-729	170	081561	082861	S	3339-47	8
"	"	"	C-SWNW	" 3	"	IA	SC	2558	3287	25	-729	168	090161	092661	S	3292-99	7
"	"	"	C-NWSW	" 4	"	OW	SC	2597	3330	25	-733	75	122361	011762	S	3337-40	3
"	"	"	C-SENW	" 5	"	AP	SC	2607	3336	26	-729	150	010462	011862	S	3341-47	6
"	"	"	C-NESW	" 6	"	AP	SC	2609	3339	24	-730	143	062562	073062	S	3339-49	10
"	"	"	C-NWNE	McConahay 3	Texaco	DA	SC	2624	3356	22	-732	-	101761	111061	-		
"	"	"	C-NENE	" 4	"	OW	SC	2621	3351	25	-730	133	071962	080862	S	3351-64	13
"	"	"	SWNE	" 5	"	OW	SC	2632	3366	26	-734	80	030262	032862	S	3366-70/3375-79	8
"	"	"	C-SENE	" 6	"	OW	SC	2630	3361	25	-731	62	080162	081462	S	3366-76	10
"	"	"	NWSE	Winters 1	"	OW	SC	2602	3332	26	-730	152	052162	061462	M	3332-38/3340-46	12
"	"	"	C-SWSE	" 2	"	WI	SC	2571	3307	24	-736	3	080762	082762	S	3307-11/3314-19	9
"	"	"	NESE	" 3	"	WI	SC	2617	3355	25	-738	-	081362	082462	-		
20	2	26	C-NWNW	Bonham 1	Rains & W.	WI	SC	2603	3334	24	-731	35	121362	010863	S	3335-44	9
"	"	"	C-SWSW	Gotchall 1	Kirk etal.	DA	SC	2567	3305	26	-738	-	041263	041863	-		
21	2	26	C-NESE	Haag 1	Murfin	DA	WC	2544	3283	27	-739	-	040660	041260	-		
"	"	"	C-NESW	" 1	Taylor	DA	WC	2530	3282	27	-752	-	091772	092872	-		
26	2	26	SESW	Ruf C-1	Jul-Tex	DA	WC	2479	3254	24	-775	-	121460	122360	-		
29	2	26	C-NWSW	Haag B-1	Walker	OW	SC	2520	3256	26	-736	56	080362	082762	S	3258-70	12
"	"	"	SESW	" B-2	"	IA	SS	2559	3285	27	-726	43	110262	113062	S	3286-01	15
"	"	"	C-SWSW	" F-1	Man	IA	SS	2513	3242	26	-729	32	111061	120961	S	3251-55	4
"	"	"	C-SWNW	Schima 1	Kirk etal.	AP	WC	2517	3253	26	-736	132	102662	103162	S	3551-61	10
"	"	"	C-NWNW	" 2	"	OW	SS	2559	3292	24	-733	120	122362	010263	S	3298-03	5
30	2	26	C-SESE	Kilzer 1	Burch	OW	SS	2510	3238	27	-728	59	041262	042762	S	3239-51	12

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
30	2	26	C-SWSE	Kilzer 2	Burch	OW	SS	2565	3291	28	-726	55	050762	061662	S	3292-04	12
"	"	"	C-NESE	" 3	"	OW	SC	2548	3283	28	-735	65	081162	091262	S	3284-96	12
"	"	"	C-NWSE	" 4	"	AP	SS	2564	3294	28	-730	85	081962	091262	S	3296-08	12
"	"	"	C-SWNE	" B-1	"	AP	SC	2566	3299	25	-733	120	091762	100362	S	3300-10	10
"	"	"	C-SENW	" B-2	"	TA	SS	2591	3324	32	-733	95	092662	101162	S	3324-38	14
"	"	"	C-NENW	" B-3	"	IA	SS	2597	3332	26	-735	76	100762	102962	S	3340-46	6
"	"	"	C-NWNE	" B-4	"	OW	SC	2552	3288	--	-736	90	101862	110262	S	3289-99	10
"	"	"	SENE	" B-5	" & Morris	IA	SC	2577	3304	27	-727	118	050163	051263	S	3304-18	14
"	"	"	C-NENE	" B-6	" "	AP	SC	2594	3326	26	-732	60	052063	052863	S	3326-41	15
"	"	"	C-SWNW	" B-7	" "	AP	SC	2559	3289	22	-730	70	052863	060563	S	3289-01	12
"	"	"	NWNW	" B-8	Burch	WI	SC	2578	3316	28	-738	-	060663	062463	S	3317-33 (Water)	16
"	"	"	C-NWSW	" D-1	" & Morris	OW	SC	2542	3271	26	-729	120	033163	040763	S	3271-85	14
"	"	"	C-SWSW	" D-2	" "	OW	SC	2551	3274	26	-723	120	040863	041563	S	3274-88	14
"	"	"	NESW	" 1	Walker	IA	SS	2587	3313	27	-726	43	113062	120662	S	3314-29	15
"	"	"	C-SESW	" 2	"	OW	SC	2573	3300	27	-727	44	080863	081263	S	3300-13	13
31	2	26	C-NENE	Haag 1	Okmar	IA	SC	2544	3269	27	-725	96	033061	042561	S	3282-88	6
"	"	"	C-SWNE	" 1	Walker	OW	SC	2539	3269	26	-730	129	072562	081662	S	3269-83	14
"	"	"	C-SWSE	" 2	"	OW	SC	2536	3259	27	-723	87	102662	112562	S	3260-74	14
"	"	"	C-NWSE	" 3	"	DA	SC	2537	3265	25	-728	-	020363	021263	-		
"	"	"	C-SESW	" 4	"	OW	SC	2539	3266	23	-727	56	051363	060763	S	3268-81	13
"	"	"	C-SENW	" 5	"	OW	SC	2566	3296	25	-730	53	091563	101663	S	3296-03	7
"	"	"	NESW	" 6	"	OW	SC	2550	3278	27	-728	16	120663	121263	S	3277-93	16
"	"	"	C-NWNE	" A-1	Clinton	OW	SS	2575	3302	26	-727	45	101961	102661	S	3304-18	14
"	"	"	NWNW	McConahay 1	Burch & M.	OW	SC	2550	3279	25	-729	88	122363	011374	S	3280-92	12
"	"	"	SWNW	" 2	Burch	AP	SC	2550	3284	25	-734	82	010364	011774	S	3286-98	12
"	"	"	C-NWSW	" 1	Walker	OW	SC	2540	3270	27	-730	84	092564	100264	S	3272-88	16
32	2	26	C-NWNW	Haag 1	Clinton	OW	SS	2529	3261	31	-732	105	090161	101061	M	3270-75	5

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
32	2	26	C-SWNW	Haag 2	Ryder	IA	SS	2506	3235	26	-729	18	092261	103161	S	3246-50	4
"	"	"	C-NENW	" 3	"	AP	SS	2542	3276	26	-734	22	112261	011062	S	3285-89	4
34	2	26	C-NWNW	Harris 1	Exeter & B.	DA	WC	2450	3255	21	-805	-	082661	083161	-		
"	"	"	C-SESE	Ruf G-1	Jul-Tex	DA	WC	2445	3253	17	-808	-	042761	050861	-		
36	2	26	C-SWNW	State 1	Grynberg	DA	WC	2398	3187	28	-789	-	122867	010568	-		
1	2	27	NWSW	Fritz 1	Platte Val.	AP	SH	2562	3287	23	-725	30	102365	103165	S		
"	"	"	C-SWSE	Fritz 1	Pl. V. & B.	OW	SC	2533	3270	22	-737	50	030165	071565	S		
"	"	"	C-NWNW	" 1	Franco	OW	SH	2578	3270	24	-692	96	080760	082360	S		
"	"	"	C-NENW	" 2	"	OW	SH	2527	3248	23	-721	72	103160	112060	S		
"	"	"	C-SWNW	" 3	"	DA	SH	2554	3289	23	-735	-	111060	111760	-		
"	"	"	SWSW	" 1	Platte Val.	DA	SH	2571	3302	25	-731	-	050868	051768	-		
"	"	"	C-SESE	" 2	" "	DA	SC	2550	3287	23	-737	-	060567	061167	-		
"	"	"	NESW	" 2	Central S.	DA	SH	2534	3265	25	-731	-	022066	022766	-		
2	2	27	C-SESW	Reagan U. 188	Midwest	WI	SH	2576	3294	23	-718	-	051967	062767	-		
"	"	"	C-NENE	Wall 1	Pubco	WI	SH	2583	3272	22	-689	150	082860	091060	S		
"	"	"	NENE	" B 2-1	"	OW	SH	----	----	--	-----	200	011561	013161	S		
"	"	"	SENE	" B 2-8	"	OW	SH	----	----	--	----	180	020361	021161	S		
"	"	"	C-SENE	" 2-8	"	WI	SH	2574	3264	22	-690	250	120360	121560	S		
"	"	"	NESE	" 2-9	"	OW	SH	2589	3306	24	-717	9	081261	081162	S		
"	"	"	NWNE	Hayes B 2-2	"	OW	SH	----	----	--	-----	180	020861	021861	S		
"	"	"	NENW	" B 2-3	"	OW	SH	2558	3238	--	-680	180	021361	022061	S		
"	"	"	NWNW	" B 2-4	"	OW	SH	2565	3250	24	-685	-	012861	020661	S		
"	"	"	SWNW	" B 2-5	"	OW	SH	----	----	--	-----	180	012161	020261	S		
"	"	"	SENW	" B 2-6	"	OW	SH	2602	3290	--	-688	456	021961	022661	S		
"	"	"	SWNE	" B 2-7	"	OW	SH	----	3274	22	-----	180	021461	022161	S		
"	"	"	NWSE	" B 2-10	"	OW	SH	----	----	--	----	240	040761	042061	S		
"	"	"	NESW	" B 2-11	"	OW	SH	2609	3305	24	-696	286	081961	090361	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
2	2	27	NWSW	Hayes B 2-12	Pubco	OW	SH	----	----	--	----	180	020761	021361	S		
"	"	"	SWSW	" B 2-13	"	OW	SH	----	----	--	----	336	030361	031561	S		
"	"	"	NWNE	" 2-2	"	OW	SH	2528	3213	23	-685	300	101560	102460	S		
"	"	"	C-NENW	" 2-3	"	OW	SH	2558	3238	24	-680	300	110360	111460	S		
"	"	"	C-NWNW	" 2-4	"	OW	SH	2565	3248	24	-683	300	113060	121260	S		
"	"	"	C-SWNW	" 2-5	"	OW	SH	2545	3229	24	-684	300	121560	122960	S		
"	"	"	C-SENW	" 2-6	"	OW	SH	2602	3290	24	-688	250	120760	121860	S		
"	"	"	SWNE	" 2-7	"	WI	SH	2584	3272	24	-688	300	102860	111160	S		
"	"	"	C-NWSE	" 2-10	"	OW	SH	2595	3291	23	-696	240	040161	042161	S		
"	"	"	C-NESW	" 2-11	"	OW	SH	2604	3302	24	-698	250	111060	112460	S		
"	"	"	C-NWSW	" 2-12	"	OW	SH	2544	3233	23	-689	200	121060	123060	S		
"	"	"	C-SWSW	" 2-13	"	WI	SH	2592	3293	23	-701	336	022661	031661	S		
3	2	27	C-NENE	Kunkee 1	Duncan	OW	SH	2506	3196	23	-690	859	120160	121760	S		
"	"	"	C-SENE	" 2	"	OW	SH	2500	3184	24	-684	1039	121060	122260	S		
"	"	"	C-NESE	" 3	"	OW	SH	2563	3256	25	-693	1008	123060	011261	S		
"	"	"	C-SESE	" 4	"	OW	SH	2593	3288	23	-695	960	010661	012161	S		
"	"	"	NWNE	" 5	"	OW	SH	2497	3182	22	-685	1008	011461	012961	S		
"	"	"	C-SWNE	" 6	"	OW	SH	2584	3270	23	-686	768	012361	020761	S		
"	"	"	NENE	" B-1	"	OW	SH	2506	3197	25	-691	840	020761	021861	S		
"	"	"	SENE	" B-2	"	OW	SH	2500	3184	21	-684	816	013161	021161	S		
"	"	"	NESE	" B-3	"	OW	SH	2563	----	--	----	630	022061	031061	S		
"	"	"	SESE	" B-4	"	OW	SH	2593	----	--	----	624	021561	022661	S		
"	"	"	NWNE	" B-5	"	OW	SH	2497	3182	21	-685	336	022561	031161	S		
"	"	"	SWNE	" B-6	"	OW	SH	2584	3271	20	-687	1608	030261	031161	S		
"	"	"	C-NENW	Stritt 3-3	Pubco	OW	SH	2552	3240	23	-688	240	022361	031361	S		
"	"	"	NWNW	" 3-4	"	WI	SH	2505	3195	22	-690	120	042561	051561	M		
"	"	"	C-SWNW	" 3-5	"	OW	SH	2517	3210	23	-693	17	052461	060363	M		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
3	2	27	C-SENW	Stritt 3-6	Pubco	WI	SH	2561	3250	23	-689	237	030761	032561	S		
"	"	"	NWSE	" 3-10	"	OW	SH	2596	3288	23	-692	240	030961	032261	S		
"	"	"	C-NESW	" 3-11	"	WI	SH	2500	3218	22	-718	432	060161	062161	M		
"	"	"	NWSW	" 3-12	"	OW	SH	2517	3214	24	-697	264	073062	082363	S		
"	"	"	SWSW	" 3-13	"	OW	SH	2576	3277	25	-701	125	031763	040863	M	3284	1
"	"	"	C-SESW	" 3-14	"	TA	SH	2476	3172	24	-696	168	051261	052861	S		
"	"	"	SWSE	" 3-15	"	OW	SH	2583	3278	24	-695	168	021361	030261	S		
"	"	"	NENW	" B 3-3	"	OW	SH	2552	3239	22	-687	408	030161	031061	S		
"	"	"	SENW	" B 3-6	"	OW	SH	----	----	--	----	6	031361	032161	S		
"	"	"	NWSE	" B 3-10	"	OW	SH	----	----	--	----	360	032761	040361	S		
4	2	27	NWNW	Coyle 4-4	"	DA	WC	2525	3234	23	-709	-	042463	042963	-		
"	"	"	NENE	Stritt 4-1	"	OW	SH	2504	3201	23	-697	74	080662	082262	M	3205	1
"	"	"	C-NWSE	" 1	"	DA	WC	2562	3269	24	-707	-	092260	092860	-		
"	"	"	C-SENE	" 4-8	"	OW	SH	2493	3190	23	-697	103	050362	051762	S		
"	"	"	NESE	" 4-9	"	OW	SH	2471	3173	24	-702	89	010263	022163	S		
"	"	"	C-SESE	" 4-16	"	OW	SH	2481	3188	24	-707	118	012765	021965	M	3195	1
5	2	27	C-SWNE	Quigley 1	Champlin	OW	WC	2535	3252	23	-717	20	011061	050472	S	3252½-56½	4
"	"	"	NWNE	" 2	St. & S.C.	DA	SE	2510	----	--	----	-	112172	113072	-		
6	2	27	NWSE	Hall 1	Kirk etal.	TA	WC	2496	3219	21	-723	-	091163	------	-		
"	"	"	SWSE	" 2	" "	DA	WC	2515	3241	23	-726	-	091863	092463	-		
"	"	"	C-SWNW	Malleck 1	Taylor	DA	PR	2552	3267	19	-715	-	052466	060466	-		
"	"	"	SENW	" 1	Kirk	OW	PR	2547	3267	20	-720	25	063063	071063	-		
"	"	"	SENE	Schaffert 1	Jet Oil	DA	WC	2518	----	--	----	-	111875	121975	-		
7	2	27	SWNW	Hall 1	Diamond	DA	WC	2555	3286	22	-731	-	121760	122960	-		
8	2	27	C-NENW	Ballou 1	Wilson	DA	WC	2495	3211	21	-716	-	080872	081472	-		
"	"	"	C-SENE	" 1	Grt. West.	WI	SH	2574	3291	23	-717	20	040263	040763	S	3290-00	10
"	"	"	C-SESE	Flaherty 1	" "	DA	SH	2573	3291	24	-718	-	081763	082463	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
9	2	27	C-SENW	Coyle 1	Grt. West.	OW	SH	2634	3344	25	-710	110	042062	051262	M	3345-55	10
"	"	"	NENW	" 2	" "	OW	SH	2601	3310	24	-709	160	062562	081862	M		
"	"	"	SWNW	" 3	" "	OW	SH	2532	3246	24	-714	120	093062	102462	M	3246-54	8
"	"	"	C-NWNW	" 4	" "	OW	WC	2537	3250	23	-713	110	011060	020560	M	3250-60	10
"	"	"	C-NESW	Ham 1	Kiel etal.	OW	SH	2600	3312	23	-712	33	080561	062862	S	3312-20	8
"	"	"	SESW	" B-2	Grt. West.	AP	SH	2571	3284	24	-713	95	041064	051464	M	3285⅓-95⅓	10
"	"	"	SESW	Twin Ham B-2	" "	AP	SH	----	----	--	----	2	051865	052465	S		
"	"	"	SWSW	Ham B-3	" "	OW	SH	2570	3277	24	-707	18	072765	081165	S	3280-88	8
"	"	"	SWSW	Twin Ham B-3	" "	DA	SH	2571	----	--	----	-	060366	061066	-		
"	"	"	NENE	Stritt 9-1	Pubco	OW	SH	2507	3214	24	-707	10	081361	083161	M		
"	"	"	NWNE	" 9-2	"	OW	SH	2578	3286	24	-708	45	122662	012163	M		
"	"	"	C-SWNE	" 9-7	"	OW	SH	2606	3313	23	-707	138	082261	122861	S	3312-22	10
"	"	"	SENE	" 9-8	"	WI	SH	2551	3253	23	-702	480	052961	061561	S		
"	"	"	NESE	" 9-9	"	TA	SH	2579	3288	23	-709	15	081362	091362	S		
10	2	27	C-SWSW	Jennings 1	Frontier	WI	SH	2605	3310	24	-705	-	070761	071961	-		
"	"	"	C-SESE	Dutton 1	Skelly	OW	SH	2605	3334	25	-729	235	041761	051061	S		
"	"	"	C-SWSE	" 2	"	WI	SH	2524	3246	24	-721	136	051061	061061	S		
"	"	"	NENE	Wall 10-1	Pubco	OW	SH	2608	3306	24	-698	120	031861	033161	S		
"	"	"	NWNE	" 10-2	"	WI	SH	2580	3275	26	-695	240	031961	033161	M		
"	"	"	SENW	" 10-6	Midwest	WI	SH	2548	3242	24	-694	360	032961	041761	M		
"	"	"	C-SWNE	" 10-7	Pubco	WI	SH	2560	3276	24	-716	180	020161	021661	S		
"	"	"	SENE	" 10-8	"	OW	SH	2606	3304	24	-698	240	041161	042261	S		
"	"	"	C-NESE	" 10-9	"	WI	SH	2567	3265	24	-698	240	022861	031961	S		
"	"	"	NWSE	" 10-10	"	WI	SH	2517	3210	25	-693	144	051861	060361	S	3210-16	6
"	"	"	C-NENW	" B 10-3	"	AP	SH	2545	3241	25	-696	125	010961	012861	M		
"	"	"	NENE	" B 10-1	"	OW	SH	----	----	--	----	432	032461	040261	S		
"	"	"	SWNE	" B 10-7	"	WI	SH	----	----	--	----	15	041963	050463	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
10	2	27	C-NESW	Stoney 10-11	Pubco	OW	SH	2554	3256	24	-702	10	030961	042862	M		
"	"	"	C-SWNW	Stritt B 10-5	"	OW	SH	2594	3296	24	-702	21	051062	051462	S		
"	"	"	NWNW	" 10-4	"	WI	SH	2559	3263	23	-704	187	041861	113064	M	3265 & 3270	2
"	"	"	C-SWNW	" 10-5	"	WI	SH	----	----	--	----	193	022061	030861	S		
11	2	27	NWNE	Wall 11-2	"	DA	SH	2621	3352	23	-731	-	121662	122363	-		
"	"	"	NWNW	" 11-4	"	OW	SH	2557	3265	23	-708	9	040161	042661	M		
"	"	"	SWNW	" 11-5	"	OW	SH	2620	3325	25	-705	104	031661	032661	S		
"	"	"	C-SWNE	" 11-7	"	DA	SH	2642	3368	24	-726	-	011462	011762	-		
"	"	"	C-NWSE	" 11-10	"	OW	SH	2632	3354	25	-722	60	010662	011862	S		
"	"	"	NESW	" 11-11	"	OW	SH	2612	3340	26	-728	240	032161	042061	S		
"	"	"	C-NWSW	" 11-12	"	TA	SH	2557	3281	25	-724	-	050961	051461	-		
"	"	"	C-SWSW	" 11-13	"	OW	SH	2618	3343	26	-725	116	092561	101061	S		
"	"	"	C-SESW	" 11-14	"	OW	SH	2624	3354	23	-730	78	122061	010562	S		
"	"	"	SWSE	" 11-15	"	OW	SH	2623	3349	24	-726	51	123061	011162	S		
"	"	"	C-SESE	" 11-16	"	DA	SH	2594	3321	27	-727	-	081064	081664	-		
12	2	27	C-SESW	Dutton 10	Skelly	OW	SC	2561	3281	23	-720	163	081464	082664	S	3282-91	9
"	"	"	C-SWNW	Fritz 1	Wakefield	DA	SH	2609	3338	23	-729	-	042961	051361	-		
"	"	"	C-NWNE	" D-1	Platte Val.	DA	SC	2577	3303	24	-726	-	110971	112171	-		
"	"	"	C-SESE	Harsch 1	Cont. & W.	AP	SC	2562	3286	25	-724	64	061961	071561	S	3286-00	14
"	"	"	C-NESE	" 2	Continental	DA	SC	2570	3301	23	-731	-	100661	101361	-		
"	"	"	C-SWSE	" 1	Pl. V. & B.	DA	SC	2551	3274	24	-723	-	030965	031765	-		
13	2	27	NWNW	Dutton 8	Skelly	OW	SC	2593	3315	26	-722	183	071864	073164	S	3316-26	10
"	"	"	C-SWNW	" 9	"	OW	SC	2547	3271	25	-724	140	080664	081764	S	3272-84	12
"	"	"	C-NWNE	Hardesty 1	Pl. V. & B.	OW	SC	2558	3290	25	-732	75	030264	031664	S	3291-01	10
"	"	"	C-NENW	" B-1	" "	OW	SC	2560	3279	25	-719	75	050664	052064	S	3282-90	8
"	"	"	C-SENW	" C-1	" "	OW	SC	2573	3289	26	-716	75	060664	062364	S	3290-00	10
"	"	"	SWNE	" D-1	" "	OW	SC	2567	3299	24	-732	80	073064	082464	S	3300-10	10

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
13	2	27	NESW	Hardesty E-1	Platte Val.	OW	SC	2610	3336	25	-726	50	022274	030273	S	3344-48	4
"	"	"	C-SWSW	" 1	Livingston	AP	WC	2617	3342	28	-725	24	101763	111263	S	3344-56	12
"	"	"	C-NWSW	" 2	"	AP	SC	2602	3325	27	-723	80	092264	092764	S	3328-36	8
"	"	"	NWSE	Nokes 1	Taylor	DA	SC	2611	3342	24	-731	-	081464	082264	-		
"	"	"	C-SESE	" 1	Burch	OW	SC	2560	3285	27	-725	47	051360	071360	S	3289-93	4
"	"	"	C-NESE	" 2	"	TA	SC	2577	3306	33	-729	50	122060	010161	S	3309-13	4
"	"	"	C-NESE	" 2	Oxford	DA	SC	2577	----	--	----	-	083076	090376	-		
"	"	"	C-NENE	" 3	Burch	AP	SC	2519	3248	26	-729	170	080861	092361	S	3256-60	4
"	"	"	C-SENE	" 4	"	OW	SC	2564	3293	25	-729	96	082361	092261	S		
"	"	"	C-SWSE	" 1	Kiel etal.	DA	SC	2582	3311	27	-729	-	071061	071561	-		
"	"	"	C-NWSE	" 1	Platte Val.	DA	SC	----	----	--	----	-	102175	103175	-		
14	2	27	C-NWNW	Dutton 3	Skelly	OW	SH	2573	3292	26	-719	182	090261	092261	S		
"	"	"	C-SWNW	" 4	"	DA	SH	2616	3338	25	-722	-	092261	092861	-		
"	"	"	C-NENW	" 5	"	WI	SH	2624	3345	26	-721	36	110961	121661	M		
"	"	"	C-NWNE	" 6	"	WI	SH	2608	3326	24	-718	204	112461	122161	S		
"	"	"	C-SWNE	" 7	"	DA	SH	2600	3325	24	-725	-	121861	122761	-		
"	"	"	C-SWSE	" 1	Platte Val.	DA	SC	2649	3378	24	-729	-	012969	020669	-		
15	2	27	SWSW	Bamesberger 1	" "	DA	WC	2637	3363	23	-726	-	040769	041669	-		
"	"	"	C-NENE	Stoney 15-1	Pubco	WI	SH	2572	3298	25	-726	41	091961	102061	S		
"	"	"	C-NWNE	" 15-2	"	WI	SH	2564	3296	24	-732	-	100261	101661	-		
16	2	27	NESW	State 1	Stoep. etal	DA	WC	2609	3346	25	-737	-	051169	051969	-		
"	"	"	NWNE	Bamesberger 1	Grt. West.	DA	SH	2634	3353	24	-719	-	051064	051564	-		
17	2	27	NENW	Miller 1	" "	DA	WC	2568	3300	23	-732	-	111863	121063	-		
18	2	27	C-SESE	Kruse 1	Platte Val.	DA	WC	2622	3374	23	-752	-	061871	062971	-		
20	2	27	C-SWSW	Weaver 1	Okmar	DA	WC	2696	3437	23	-741	-	122360	010261	-		
21	2	27	NWNW	Townley 1	Cabot	DA	WC	2521	3260	25	-739	-	041761	042561	-		
22	2	27	NESE	Quaduor 1	Platte Val.	DA	SC	2661	3380	27	-719	-	121568	122468	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
22	2	27	C-SWNW	Bamesberger 1	Platte Val.	DA	WC	2658	3385	25	-727	-	122169	123069	-		
"	"	"	SENE	" 1	Stoep. etal	AP	SC	2640	3358	26	-718	12	042869	070969	S	3367-68	1
"	"	"	NENE	" 2	" "	DA	SC	2618	3334	26	-716	-	090569	091469	-		
23	2	27	C-SENW	" 1	Platte Val.	OW	SC	2659	3379	25	-720	100	032968	050968	S	3387-93	6
"	"	"	NENW	" 2	" "	OW	SC	2628	3347	25	-719	65	061968	072668	S	3354-60	6
"	"	"	C-SWSE	" 3	" "	OW	SC	2611	3335	25	-724	40	121566	020967	S	3334-50	16
"	"	"	C-SWNW	D. " 3	" "	OW	SC	2639	3352	24	-713	110	101468	112968	S	3359-64	5
"	"	"	NWNW	" 4	" "	DA	SC	2647	3372	26	-725	-	113068	120968	-		
"	"	"	C-SESW	Quaduor 1	Cent. State	OW	SC	2575	3295	25	-720	55	072766	080466	S	3303-05	2
"	"	"	SWSW	Quaduor 1	Smith	AP	SC	2648	3366	29	-718	-	090266	090566	-		
"	"	"	C-NWNE	" 1	Platte Val.	OW	SC	2645	3373	25	-728	50	072568	080168	M	3381-87	6
"	"	"	C-NWSW	" B-1	" "	OW	SC	2646	3361	25	-715	60	021670	040870	S	3370-74	4
"	"	"	NENE	" 2	" "	OW	SC	2614	3347	25	-733	-	110568	123168	S	3353-58	5
"	"	"	C-NESW	" B-2	" "	OW	SC	2633	3356	27	-723	60	031670	032370	S	3364-68	4
"	"	"	C-NWSE	Thomas 1	" "	OW	SC	2645	3364	26	-719	40	092669	100469	S	3372-78	6
"	"	"	C-SESE	" 2	" "	OW	SC	2628	3350	26	-722	40	111069	111769	S	3360-64	4
"	"	"	C-NESE	" 3	" "	OW	SC	2645	3361	27	-716	50	120169	120869	S	3371-75	4
"	"	"	SENE	" 4	" "	OW	SC	2624	3346	27	-722	50	120869	121869	S	3354-60	6
"	"	"	C-SWNE	" 1	Taylor & S.	OW	SC	2667	3380	24	-713	26	081063	081663	S	3388-90	2
24	2	27	C-NENE	Nokes A-1	Burch	OW	SC	2551	3277	25	-726	80	103060	111160	S	3279-89	10
"	"	"	C-SENE	" A-2	"	DA	SC	2605	3340	26	-735	-	121360	122060	-		
"	"	"	SWSW	Quaduor 1	Taylor	AP	SC	2650	3375	26	-725	48	072171	081771	S	3378-88	10
"	"	"	SESW	" 2	"	OW	SC	2625	3355	27	-730	20	091571	100471	S	3357-67	10
"	"	"	NWSW	" A-1	Livingston	OW	WC	2659	3385	25	-726	50	100263	102763	S	3386-97	11
"	"	"	NESW	" 3-1	Taylor	OW	SC	2624	3350	23	-726	15	101071	010672	S	3355-63	8
"	"	"	C-SWNW	" 4-1	"	OW	SC	2650	3369	29	-719	50	120871	010872	S	3370-74/3380-84	8
"	"	"	C-SESW	" 1	Walker	DA	WV	2621	3352	25	-731	-	051662	062162	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
24	2	27	C-SENW	Quaduor 1	Indigo & D.	DA	SC	2634	3365	21	-731	-	022774	030774	-		
25	2	27	C-NENW	Fischer 1	Bentex	AP	WC	2627	3360	23	-733	126	061261	062061	S	3363-72	9
"	"	"	SENW	" 1	Platte Val.	OW	SC	2604	3336	27	-732	25	021673	050373	S	3346-50	4
"	"	"	NWNE	" 1-25	" "&Gemini	OW	SC	2591	----	--	-----	15	092770	101470	S	3330-34	4?
"	"	"	C-NWNE	" A-1	Simmons	DA	WC	2588	3316	28	-728	-	080161	080761	-		
"	"	"	C-NESENE	Kilzer 1	Gilbert	DA	WC	2585	3324	21	-739	-	092056	092756	-		
"	"	"	C-SESE	" 1	Tenneco	OW	SC	2552	3283	25	-731	56	061463	062163	S	3283-96	13
"	"	"	NESE	" 2	"	OW	SC	2530	3256	25	-726	116	092563	100863	S	3251-70	13
"	"	"	C-SWSE	Murphy 1	J.&C. & Sto.	OW	SC	2587	3316	23	-726	8	010873	031073	S	3324-27	3
"	"	"	C-SESW	" 2	" "	OW	SC	2579	3312	24	-733	20	021273	021873	M	3320-24	4
"	"	"	C-NWNW	Quaduor C-1	Platte Val.	OW	SC	2633	3366	25	-733	10	072372	073072	S	3374-78	4
"	"	"	SWNW	" C-2	" "	OW	SC	2629	3360	26	-731	10	100272	101072	S	3367-74	7
"	"	"	C-NWSW	Murphy A-1	Taylor	OW	SC	2610	----	--	----	100	022073	032273	S	3348-60	12
26	2	27	C-NWNE	Bamesberger 1	Pl. V. & B.	OW	SC	2613	3337	25	-724	80	061864	070564	S	3338-50	12
"	"	"	C-SWNE	" B-1	" "	OW	SC	2597	3318	24	-721	25	072364	082464	S	3320-32	12
"	"	"	C-NENE	Martin 1	" "	OW	SC	2644	3378	24	-734	40	100964	102364	S	3387-92	5
"	"	"	C-SENE	" B-1	" "	OW	SC	2621	3356	25	-735	25	010365	020465	S	3364-70	6
"	"	"	C-NWSE	Murphy 1	Walker	DA	WC	2582	3306	26	-724	-	041663	042263	-		
"	"	"	C-NWNW	Niccolson 1	"	AP	WC	2620	3340	25	-720	41	011463	021863	S	3342-55	13
"	"	"	C-NENW	Wood A-1	Burch	OW	WC	2604	3324	26	-720	80	111363	010564	S	3330-36	6
"	"	"	C-NWSE	Brakhahn & M.	Taylor	OW	MR	2582	----	--	-----	5	022272	041572	S	3306-20	14?
"	"	"	NESE	" & M.2	"	OW	SC	2590	----	--	-----	100	122972	011173	S	3317-21/3324-28	8?
27	2	27	C-NWSW	Quaduor 1	Volentine	DA	WC	2600	3334	24	-734	-	042861	050561	-		
"	"	"	C-NENE	Stoller 27-1	Pubco	DA	WC	2628	3350	25	-722	-	030563	031163	-		
29	2	27	C-SENE	Helm 1	Monahan	DA	WC	2644	3381	24	-737	-	052965	060465	-		
31	2	27	C-NENE	" 1	Empire	DA	WC	2622	3365	25	-743	-	091970	092570	-		
"	"	"	C-SWSW	Morgan 1	Mast	DA	WC	2585	3305	25	-720	-	070960	071560	-		

SEC	T N	R W	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
32	2	27	C-NESE	Brause 1	McLish etal.	DA	WC	2556	3290	24	-734	-	043062	050762	-		
34	2	27	C-NESE	Breach 1	Burch etal.	OW	MR	2616	3336	27	-720	100	070864	072864	S	3338-50	12
"	"	"	C-SESE	" B-1	Pl. V. & B.	OW	MR	2589	3307	25	-718	70	091864	101864	S	3310-20	10
"	"	"	C-SWSE	" C-1	" "	OW	MR	2600	3318	24	-718	60	112764	012965	S	3321-39	18
"	"	"	C-NWSE	" D-1	Platte Val.	DA	MR	2622	3340	26	-718	-	040765	041465	-		
"	"	"	SESW	Kircher 1	Indigo	OW	MR	2597	----	--	----	50	072574	080474	S	3322-26	4?
"	"	"	C-SWSW	" 2	"	OW	MR	2567	3288	26	-721	40	010575	011675	S	3296-00	4
35	2	27	SWSW	Allen 1	Taylor	OW	MR	2575	3294	26	-719	55	121270	010971	S	3294-04	10
"	"	"	C-SENW	Dutton 1	Burch etal.	OW	WC	2580	3300	27	-720	53	052562	062962	S	3302-14	12
"	"	"	C-SWNW	McKillip 1	Walker	OW	MR	2600	3322	26	-722	36	120862	011263	S	3324-38	14
"	"	"	C-NESW	Wood B-1	Burch	OW	MR	2589	3313	26	-724	80	112063	011064	S	3314-28	14
36	2	27	C-SWNE	McConahay B-1	"	DA	SC	2559	----	--	----	-	071674	072274	-		
"	"	"	C-SENE	" B-2	Burch & M.	DA	SC	2509	3248	26	-739	-	080764	081464	-		
"	"	"	C-NENE	" 3	" "	OW	SC	2534	3263	25	-729	80	021364	030564	S	3262-74	12
"	"	"	C-NWNE	" 4	Burch	IA	SC	2575	3306	25	-731	80	022064	030564	S	3306-18	12
"	"	"	C-NENW	State 1	Simmons	DA	WC	2545	3280	25	-735	-	030861	031961	-		
"	"	"	C-NENW	" 1	Gemini	OW	SC	2545	----	--	----	30	072474	082574	S	3286-92	6?
1	2	28	NENW	Brooks 1	Taylor	DA	WC	2520	3210	22	-690	-	102968	110468	-		
"	"	"	C-SWSW	Malleck 1	Skelly	DA	AK	2584	3261	25	-677	-	033161	040861	-		
2	2	28	C-NWSE	Darnell 1	Farmer	DA	NA	2542	3224	22	-682	-	051271	052771	-		
"	"	"	C-SENE	McCallum 1	Leben	DA	WC	2487	3166	24	-679	-	050460	051360	-		
"	"	"	C-SWNE	" 1	Farmer	AP	WC	2533	3211	21	-678	130	012671	021471	M		
"	"	"	C-NWNE	" 2	"	DA	NA	2546	3218	23	-672	-	101871	102471	-		
3	2	28	C-SWNW	Uerling 1	Burch	DA	WC	2549	3232	24	-683	-	063060	070760	-		
"	"	"	C-SESE	Lehn 1	"	DA	WC	2584	3277	24	-693	-	060760	061760	-		
4	2	28	C-SESW	Johnette 1	Farmer	DA	WC	2490	3186	22	-696	-	040372	040872	-		
"	"	"	C-NENW	Schaffert 1	Empire	DA	WC	2499	----	--	----	-	083173	090673	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL	"B" DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
5	2	28	C-SENW	Bey 1	Geochemical	DA	WC	2563	3280	13	-717	-	121561	122161	-		
8	2	28	C-NESW	" 1	Murfin	DA	WC	2600	3318	23	-718	-	041461	041961	-		
9	2	28	C-SESE	Hinz A-1	Tenneco	DA	WC	2554	3265	18	-711	-	102361	110162	-		
10	2	28	C-SWSE	Kunkee 1	"	DA	AK	2616	3305	21	-689	-	080462	081262	-		
11	2	28	C-SWSWSE	Hofman 1	Frontier	OW	AK	2551	3230	22	-679	284	120859	011060	M	3232-38	6
"	"	"	C-NWSW	" C-3	Husky	OW	AK	2585	3266	23	-681	6	042975	052175	M	3268-75	7
"	"	"	C-NWSE	" 3	Frontier	OW	AK	2559	3232	22	-673	90	050960	051660	S		
"	"	"	C-NESE	" 5	"	OW	AK	2601	3281	22	-680	157	011861	013161	M	3283-86	3
"	"	"	C-SESW	" B-1	"	OW	AK	2567	3244	23	-677	190	122059	010760	M	3244½-48½	4
"	"	"	C-SENE	" D-1	"	OW	AK	2561	3238	23	-677	34	033061	042761	M	3238-42½	4½
"	"	"	C-SWNE	" D-2	"	DA	AK	2565	3238	26	-673	-	042261	052561	-		
"	"	"	SESE	" E-1	"	OW	AK	2603	3286	23	-683	81	111363	112663	S		
12	2	28	C-SWNW	Hinz 1	"	OW	AK	2605	3290	23	-685	148	021661	030461	S		
"	"	"	C-E½SW	Sughroue 3	Husky	WI	AK	2628	3355	23	-727	181	092269	101069	M		
"	"	"	NENWSW	" 4	"	OW	AK	2618	3306	23	-688	180	022672	031172	M		
"	"	"	C-NWNWSE	" 5	"	OW	AK	2605	3320	23	-715	68	011175	020475	M		
"	"	"	C-NWNE	Malleck 1	Skelly	OW	WC	2553	3256	23	-703	199	121463	010274	S		
"	"	"	C-NWSW	Sughroue 1	"	OW	AK	2585	3272	21	-687	133	112660	121760	M	3271-76	5
"	"	"	C-SWSW	" 2	"	OW	AK	2567	3274	22	-707	90	112462	052463	M		
13	2	28	C-NWNW	" 1	Platte Val.	OW	AK	2586	3308	23	-722	25	101770	102670	S		
14	2	28	SESE	Goodenberg. 1	Ram. & Ack.	OW	AK	2597	3303	23	-706	120	120963	010764	M	3306-12	6
"	"	"	NWNE	Hofman 2	Frontier	OW	AK	2559	3240	23	-681	186	010960	012560	M	3241-48	7
"	"	"	C-SWNE	" 4	"	OW	AK	2584	3272	20	-688	98	050160	050860	S		
"	"	"	C-SWNW	" B-2	"	OW	AK	2595	3280	20	-685	147	030360	031060	S		
"	"	"	C-NWNW	" B-3	"	OW	AK	2587	3270	22	-683	169	062360	070460	S		
"	"	"	C-SENW	" C-1	"	OW	AK	2582	3264	21	-682	85	091560	092960	M	3265½-69½	4
"	"	"	C-NENW	" C-2	"	OW	AK	2577	3264	18	-687	46	101460	102660	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
14	2	28	NESE	Hofman F-1	Frontier	OW	AK	2617	3330	23	-713	84	112063	120563	S		
"	"	"	C-NWNESW	Reiners 1	"	OW	WC	2598	3272	23	-674	121	110759	110959	M	3273-78	5
"	"	"	C-SESW	" 2	"	OW	AK	2606	3277	22	-671	160	121159	013060	M	3277-87	10
"	"	"	SWSW	" 3	"	OW	AK	2624	3303	23	-679	166	011860	022560	S		
"	"	"	C-NWSW	" 4	"	OW	AK	2615	3297	22	-682	134	033060	041660	S		
"	"	"	C-NWSE	" B-1	"	OW	AK	2589	3266	20	-677	161	041560	042760	M	3270-71	1
"	"	"	SWSE	" B-2	"	OW	AK	2567	3248	22	-681	94	052860	060460	S		
15	2	28	C-SENE	Kunkee 1	"	OW	AK	2613	3302	20	-689	165	040760	041960	S		
"	"	"	C-SWNE	" 2	"	OW	AK	2599	3285	22	-686	102	042260	050360	S		
"	"	"	C-NENE	" 3	"	OW	AK	2605	3293	21	-688	24	071360	072360	S		
"	"	"	C-SESE	Reiners B-3	"	OW	AK	2622	3301	23	-679	30	062960	071260	M	3303-04	1
16	2	28	SESWSE	State 1	Bondville	DA	WC	2578	3276	24	-698	-	110258	111458	-		
18	2	28	C-NWSW	Breitling 1	Burch	DA	WC	2651	3422	23	-771	-	110661	111461	-		
21	2	28	C-SESE	Tomeck 1	Kan-Lans	DA	AK	2608	3309	26	-701	-	100560	101460	-		
22	2	28	C-NENE	Esch 1	B.A. & Vol.	OW	AK	2614	3285	22	-671	180	123159	010760	M	3288-94	6
"	"	"	C-SENE	" 2	B.A. etal.	OW	AK	2636	3302	24	-666	123	051860	053060	M	3305-07/3310-14	6
"	"	"	C-SWNE	" B-1	Frontier	OW	AK	2615	3282	24	-667	78	052960	061260	M	3288-93	5
"	"	"	C-NWNE	" B-2	Monahan	OW	AK	2621	3302	23	-681	83	060560	061860	S		
"	"	"	C-NESE	Newton 1	Brit. Amer.	OW	AK	2628	3288	24	-660	133	071860	073060	M	3294-00	6
"	"	"	C-NWSE	" 2	B.A. & Vol.	OW	AK	2602	3263	25	-661	155	072660	080460	M	3269-74	5
"	"	"	C-SESE	" 3	" "	OW	AK	2634	3297	25	-663	155	081760	083160	M	3297-01/3306-10	8
"	"	"	C-SWSE	" 4	" "	OW	AK	2649	3319	25	-670	125	082660	090260	M	3319-29	10
"	"	"	C-NESW	" 5	" "	OW	AK	2606	3280	25	-674	100	090360	090760	M	3281-91	10
"	"	"	C-SESW	" 6	" "	OW	AK	2586	3263	26	-677	54	091360	092560	M	3264-66/3270-74	6
"	"	"	C-SE	Newton 7	Husky	OW	AK	2590	3249	26	-659	33	031176	041076	M	3250-62	12
23	2	28	C-NWSW	Cashen 1	B.A. & Vol.	OW	AK	2659	3317	24	-658	140	061560	062160	M	3316-19/3324-28	7
"	"	"	C-NESW	" 2	" "	OW	AK	2664	3328	24	-664	118	063060	071360	M	3328-36	8

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23	2	28	C-SWSW	Cashen 3	B.A. & Vol.	OW	AK	2673	3334	25	-661	120	071260	072160	M	3343-46	3
"	"	"	C-SESW	" 4	" "	OW	AK	2684	3392	25	-708	89	080460	081760	M	3399-04	5
"	"	"	C-NENE	Goodenberg. 1	Cities Ser.	DA	AK	2628	3357	24	-729	-	082760	091960	-		
"	"	"	C-NWNE	Reiners 5	Frontier	OW	AK	2572	3241	23	-669	180	070660	071960	M	3248-49	1
"	"	"	SWNE	" 6	Husky	OW	AK	2610	3301	26	-691	60	041675	051575	M	3302-10	8
"	"	"	C-NWNW	" C-1	Frontier	OW	AK	2642	3315	22	-673	198	012960	030460	M	3315⅓-17⅓/19-22	5
"	"	"	SWSENW	" C-1	"	WI	AK	2644	3308	22	-664	-	050263	051063	-		
"	"	"	C-NENW	" C-2	"	OW	AK	2619	3285	22	-666	153	022360	031060	M	3292-96	4
"	"	"	C-SENW	" C-3	"	OW	AK	2632	3298	23	-666	77	061560	070260	M	3304-05	1
"	"	"	C-SWNW	" C-4	"	OW	AK	2646	3311	23	-665	200	060560	061160	M	3319-20	1
25	2	28	C-NENE	Goodenberg. 1	Stoep. etal.	DA	WC	2675	3418	24	-743	-	121463	122263	-		
26	2	28	C-NWSW	Cashen 1	Frontier	OW	WC	2686	3381	24	-695	40	062160	062960	S		
"	"	"	C-NWNW	Haag A-1	"	OW	AK	2668	3345	25	-677	195	072260	080560	M	3354-55⅓	1⅓
"	"	"	C-SWNW	" A-2	"	OW	AK	2682	3368	26	-686	120	092960	101360	M	3376-80	4
27	2	28	C-NENE	" B-1	"	OW	AK	2634	3303	25	-669	200	073160	081160	M	3310⅓-12	1⅓
"	"	"	C-NWNE	" B-2	"	OW	AK	2636	3306	26	-670	146	100660	101960	M	3306⅓-8⅓/14-18⅓	6⅓
"	"	"	C-SENE	" B-3	"	OW	AK	2678	3352	26	-674	165	092260	100460	M	3361-65	4
"	"	"	C-SWNE	" B-4	"	OW	AK	2631	3308	26	-677	123	102060	110560	S	3308⅓-11/16-20	7⅓
"	"	"	C-NENW	McFadden 1	Stoep. etal.	DA	AK	2644	3323	27	-679	-	042966	050766	-		
"	"	"	C-NWSE	Winters 1	Burch	AP	WC	2666	3346	26	-680	120	061860	071260	S	3357-60	3
29	2	28	C-SWSW	Hofman 1	Lewis etal.	DA	WC	2645	3412	26	-767	-	060661	061461	-		
33	2	28	C-NENE	McGuire 1	Mast	DA	AK	2631	3361	26	-730	-	100760	101460	-		
34	2	28	C-NENESE	Schultz 1	Dunn & S.	DA	WC	2680	3384	28	-704	-	010157	010757	-		
"	"	"	C-NENE	Seeman 1	Empire	DA	WC	2684	3374	26	-690	-	121774	122374	-		
"	"	"	C-SWNE	Leeman 1	Husky	DA	WC	2674	3377	31	-703	-	030376	031076	-		
35	2	28	C-NESW	Schultz 1	Pl.V. & B.	DA	WC	2662	3360	24	-698	-	111864	112664	-		
"	"	"	C-NENE	Stewart 1	Empire	DA	WC	2654	3370	23	-716	-	072074	072774	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
36	2	28	C-SESW	Haag 1	Pet. Manag.	OW	WC	2613	3323	26	-710	45	061268	080968	M	3324-26	2
1	2	29	C-NESW	Lauer 1	Leben	DA	WC	2537	3280	14	-743	-	061660	062560	-		
2	2	29	SWSWSW	Bauer 1	Nebr. Oil	DA	WC	----	----	--	----	-	082034	------	-		
4	2	29	C-SWSWSW	St. John 1	J.S. & F.	DA	WC	2484	3356	12	-872	-	012556	020356	-		
8	2	29	C-SWSWSW	Butler 1	" "	DA	WC	2639	3548	13	-909	-	082655	090455	-		
"	"	"	C-NESW	" 1	Strata	DA	WC	2583	3488	16	-905	-	031462	032362	-		
12	2	29	C-NWNE	Kisker 1	Midwest	DA	WC	----	----	--	----	-	081175	100375	-		
"	"	"	C-NWSE	" 1	Midwest E.	DA	WC	2615	3349	25	-734	-	081175	100375	-		
13	2	29	NWSW	Propp P. 1	B. & M.	DA	WC	2613	3387	24	-774	-	092072	092872	-		
15	2	29	C-SWSE	Sutton 1	Leben	DA	WC	2553	3363	24	-810	-	071760	072660	-		
16	2	29	C-NWNW	State 1	Farmer	DA	WC	2632	3521	26	-889	-	011361	020861	-		
19	2	29	C-SESE	Poore B-1	Rothmeier	DA	PO	2670	3622	17	-952	-	092260	100160	-		
20	2	29	SENW	" 1	B. & M.	DA	WC	2652	3563	17	-911	-	092872	100572	-		
"	"	"	C-SESW	" C-1	Stoep. & R.	DA	PO	2678	3612	23	-934	-	122366	123166	-		
21	2	29	C-NENE	Potthoff 1	Leben	DA	WC	2665	3514	21	-849	-	081169	081669	-		
"	"	"	C-SWSW	Motter 1	Western	DA	WC	2702	----	--	----	-	121258	122158	-		
26	2	29	C-NESW	Shields 1	National	DA	WC	2676	3518	26	-842	-	040460	041360	-		
29	2	29	C-NWNWNW	Poore 1	Monahan	AP	WC	2665	3611	14	-946	-	061557	070457	S		
32	2	29	C-NENW	Thompson 1	Rothmeier	DA	WC	2750	3718	24	-968	-	091260	092060	-		
36	2	29	C-SWNENE	State 72-36	Superior	DA	WC	2741	3557	25	-816	-	061851	053151	-		
1	2	30	C-SWSE	Crocker 1	Geochemical	DA	WC	2509	3466	20	-957	-	011962	012562	-		
10	2	30	C-NWNW	Wallen 1	Blair & M.	DA	WC	2625	3598	11	-973	-	120560	121360	-		
11	2	30	NENW	Wacker 1	Far-West	DA	WC	2539	3497	14	-958	-	081861	082661	-		
12	2	30	C-SESE	Conroy 1	" "	IA	WC	2521	3469	24	-948	5	062061	062561	S		
13	2	30	NWNW	Hesterwerth 1	Clayton	DA	WC	----	----	--	----	-	101575	102775	-		
16	2	30	C-SWSW	Myers 1	Jackson	DA	WC	2568	3546	18	-978	-	051360	052160	-		
18	2	30	C-SESE	" 1	Huber	DA	WC	2575	3572	11	-997	-	040361	041161	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
19	2	30	C-SESE	Myers 1	Geochemical	DA	WC	2608	3601	10	-993	-	082462	090162	-		
20	2	30	C-SESESW	" 1	Stauolind	DA	WC	2676	3661	13	-985	-	080244	092044	-		
23	2	30	C-NWNWNW	Harris 1	Betts etal.	DA	WC	2700	3694	11	-994	-	080754	091154	-		
29	2	30	C-NWNE	Myers 1	Murfin	DA	WC	2737	3732	11	-995	-	030270	030970	-		
33	2	30	C-SESW	Myer 1	Leben	DA	WC	2693	3714	16	1021	-	051460	052660	-		
35	2	30	C-NENE	Larmon 1	Tipps	DA	WC	2729	3740	15	1011	-	042561	050661	-		
4	3	26	SWSE	Weber 1	Murfin	DA	WC	2306	2950	24	-644	-	112260	112860	-		
6	3	26	NWNE	Noll 1	R. & K.	DA	WC	2357	3006	24	-649	-	081060	081860	-		
7	3	26	NENE	Smith 1	Pan Am	DA	WC	2328	3009	25	-681	-	012464	013064	-		
"	"	"	C-SWNW	J. Smith	" "	DA	WC	2330	2971	26	-641	-	112563	120163	-		
9	3	26	C-SWSE	Fritzer 1	Burch	DA	WC	2360	3002	22	-642	-	072661	080661	-		
11	3	26	C-SESW	Deterding	Mast & Bale	DA	WC	2326	2970	24	-644	-	022562	030262	-		
17	3	26	NENE	D. Smith 1	U.S. Smelt.	DA	WC	2377	3032	34	-655	-	102364	102864	-		
18	3	26	C-NWSW	Schmelzer 1	B. & Cajr.	DA	WC	2475	3145	23	-670	-	052561	053061	-		
20	3	26	C-SENW	Cochran 1	U.S. Smelt.	DA	WC	2443	3106	26	-663	-	061066	061766	-		
21	3	26	C-NWNE	Seydlitz 1	Jones etal.	DA	WC	2463	3103	25	-640	-	111560	112160	-		
26	3	26	NWNW	Hilton 1	Duran	DA	WC	2440	3112	28	-672	-	092961	100361	-		
27	3	26	SWSE	" 1	Christie S.	DA	WC	2434	3110	23	-676	-	060662	061362	-		
28	3	26	C-SESW	Ohlson 1	Strata & S.	DA	WC	2451	3150	24	-699	-	070575	071375	-		
29	3	26	C-NWNW	Kerst 1	K.M.A.R.	DA	WC	2460	3135	24	-675	-	062962	070662	-		
"	"	"	C-SESW	" 29-14	Pubco	DA	BT	2508	3180	21	-672	-	041661	042261	-		
30	3	26	C-SWSW	Teter 1	Skelly	DA	SH	2454	3146	22	-692	-	111760	112560	-		
"	"	"	C-SESE	" 2	"	DA	BT	2509	3192	24	-683	-	012561	020361	-		
31	3	26	C-SWNE	" 1	Murfin	DA	BT	2497	3192	23	-695	-	101961	102561	-		
"	"	"	C-NWSW	Fitchner 1	"	DA	SH	2453	3151	23	-698	-	080263	080863	-		
32	3	26	C-NWNW	Gallatin 1	Jones etal.	OW	BT	2500	3180	24	-680	40	112660	121160	S		
"	"	"	SWNW	" 2	Stoep. & G.	DA	BT	2515	3228	24	-713	-	040670	041370	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
32	3	26	C-SESE	Gallatin 1	Lewis Bro.	DA	BT	2457	3177	23	-720	-	041661	042461	-		
"	"	"	SENE	Harsh Ltd. 1	J.&C. etal.	DA	WC	2449	3163	22	-714	-	021076	021876	-		
36	3	26	C-SWNW	Sch. Land 1	Christie S.	DA	WC	2489	3158	26	-669	-	061562	062062	-		
"	"	"	C-NENE	State 1	Volentine	DA	WC	2398	3067	24	-669	-	051161	051661	-		
2	3	27	C-NWSE	Nelson 1	Elder & Y.	DA	WC	2356	3048	25	-692	-	102066	102566	-		
3	3	27	C-NESW	Kurtz 1	Nebr. Drl.	DA	WC	2423	3115	11	-692	-	021061	021761	-		
5	3	27	C-NWNE	Zink 1	Taylor	DA	WC	2468	3175	27	-707	-	101967	102867	-		
6	3	27	SESW	Poore 1	Evans etal.	DA	WC	----	----	--	----	-	012550	030250	-		
"	"	"	C-SESENW	Kunkel 1	J.S.&F.	DA	WC	2486	3185	18	-699	-	011456	012256	-		
8	3	27	C-NWSE	Albrecht 1	Foree	DA	WC	2367	3078	16	-711	-	071364	071964	-		
"	"	"	C-NENE	Galloway 1	Foree & Fld.	DA	WC	2393	3097	12	-704	-	032764	040374	-		
9	3	27	C-NWNE	Burton 1	Farmer	DA	WC	2369	3072	27	-703	-	011971	012571	-		
10	3	27	C-SWSW	Kurtz 1	Day Res.	DA	WC	2370	3035	15	-665	-	020974	021674	-		
"	"	"	C-SESW	" 1	Thomas Pr.	DA	WC	2349	3030	15	-681	-	072963	080363	-		
11	3	27	C-NESW	Sughroue 1	Stoep. & S.	DA	WC	2338	3020	23	-682	-	090167	090667	-		
12	3	27	C-SWNW	Thomas E-1	B. Amer.	DA	WC	2341	3005	23	-664	-	082861	090261	-		
"	"	"	C-NESE	" 1	Globe	DA	WC	2332	----	--	----	-	101973	102573	-		
13	3	27	C-SWSW	Cochran 1	Hansen	DA	SH	2427	3089	24	-662	-	092861	100661	-		
"	"	"	C-SESW	" 2	Midwest	DA	SH	2427	3102	24	-675	-	020966	021466	-		
14	3	27	C-NWSW	Fritz 5	"	DA	SH	2487	3162	21	-675	-	121761	122371	-		
"	"	"	C-NWNE	Thomas 1	Murfin & M.	DA	WC	2348	----	--	----	-	033074	051574	-		
"	"	"	C-SESE	Tiller C. 1	Champ. & H.	WI	SH	2465	3140	20	-675	93	081261	090161	S		
"	"	"	C-NESE	" 2	"	DA	SH	2469	3134	23	-665	-	090861	091761	-		
"	"	"	C-SWSE	" 1	Champlin	OW	WC	2476	3141	22	-665	49	051161	061261	S		
"	"	"	C-SESW	" 2	"	WI	SH	2490	3154	25	-664	13	063061	071861	S		
"	"	"	C-NWSE	" 3	"	WI	SH	2468	3138	22	-670	81	072061	072961	S		
"	"	"	NESW	" 4	"	WI	SH	2464	3134	21	-670	135	092461	100361	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
15	3	27	C-SWSE	Emerich 1	Skelly	OW	SH	2487	3159	25	-672	28	071963	072463	S		
"	"	"	C-SESW	" 1	Livingston	OW	SH	2495	3118	31	-673	350	061763	070163	S		
"	"	"	C-SWSW	" 2	"	OW	NW	2477	3149	24	-672	455	062363	062863	S		
"	"	"	C-NWSW	" 3	"	OW	NW	2478	3148	22	-670	450	070863	071263	S		
"	"	"	C-NESW	" 4	"	OW	SH	2450	3113	23	-663	200	071463	071963	S		
"	"	"	C-SWNW	Sughroue 1	Skelly	OW	WC	2354	3034	21	-680	120	072563	072963	S		
"	"	"	SENW	" A-1	"	DA	NW	2405	3084	25	-679	-	011464	011964	-		
16	3	27	SESE	Emerich 1	"	DA	SH	2388	3064	23	-676	-	073063	050563	-		
"	"	"	SWSW	" 1	Stoeppel.	DA	SH	2405	3093	25	-688	-	081863	082263	-		
"	"	"	NESE	" 1	Kidd	OW	SH	2389	3069	23	-680	162	080363	080863	S		
"	"	"	C-SENE	State 1	"	DA	NW	2354	3036	23	-682	-	043064	050564	-		
"	"	"	NWSE	" 1	Platte Val.	DA	NW	2380	3061	21	-681	-	091068	091568	-		
"	"	"	C-SENW	Sughroue 1	Stoeppel.	DA	WC	2359	3050	12	-691	-	060465	060965	-		
19	3	27	NENW	Esch 1	Platte Val.	DA	WC	2372	3088	18	-716	-	120767	121467	-		
"	"	"	SESW	" 2	" "	DA	WC	2479	3192	12	-713	-	022068	022868	-		
20	3	27	C-SESE	McConville 1	Sauvage	DA	WC	2444	3143	22	-699	-	111863	112663	-		
"	"	"	C-NENW	Winner 1	Most etal.	DA	WC	2487	3194	26	-707	-	042468	050168	-		
21	3	27	C-NWNE	Emerich 1	Grt. West.	AP	WC	2488	3172	24	-684	5	092761	100364	S	3172-78	6
"	"	"	C-SWNW	" 1	" "	DA	WC	2465	3157	22	-692	-	062261	062861	-		
"	"	"	C-NENE	Wimer 1	Livingston	OW	SH	2428	3102	25	-674	140	071963	072463	S		
"	"	"	C-SWSE	" 1	M., L. & M.	DA	WC	2509	3194	23	-685	-	120762	121462	-		
"	"	"	NENW	Y. Bayless 1	Stoep. & S.	DA	WC	2466	3154	26	-688	-	030375	031075	-		
"	"	"	C-SENE	Wimer A-1	J. & C.	DA	NW	2450	3132	25	-682	-	011076	011776	-		
22	3	27	SESE	W. Fritz 1	Skelly	WI	SH	2517	3222	23	-705	28	091361	100561	S		
"	"	"	C-SENE	M. Fritz 1	"	WI	SH	2497	3166	22	-669	107	022262	031562	S		
"	"	"	C-NENW	" " 5	"	OW	SH	2467	3138	24	-671	502	070563	071163	S		
"	"	"	C-NESE	" " 6	"	DA	SH	2496	3188	22	-692	-	032662	040362	-		

SEC	T N	R W	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
22	3	27	NWNW	Wimer 1	Gulf	OW	NW	2404	3075	25	-671	210	081363	091163	S		
"	"	"	C-NWSW	" 2	C. & M.	DA	NW	2426	3114	25	-688	-	052564	053064	-		
23	3	27	SENE	Lang A-1	Skelly	WI	SH	2487	3182	24	-695	87	070661	072461	S		
"	"	"	C-NENE	" A-2	"	DA	SH	2466	3160	23	-694	-	092761	100861	-		
"	"	"	C-SESE	Kennedy 1	"	OW	SH	2438	3135	22	-697	252	042561	051861	S		
"	"	"	C-SWSE	" 3	"	OW	SH	2498	3192	22	-694	244	051161	060861	S		
"	"	"	C-NESE	" 4	"	WI	SH	2475	3172	23	-697	120	052761	061561	S		
"	"	"	C-NWSE	" 5	"	OW	SH	2502	3198	23	-696	193	060961	070161	S		
"	"	"	SWSW	W. Fritz 1	"	OW	SH	2529	3226	23	-697	69	051861	061661	S		
"	"	"	C-SESW	" " 2	"	OW	SH	2529	3225	23	-696	206	052661	062261	S		
"	"	"	C-NESW	" " 3	"	OW	SH	2518	3216	23	-698	171	060961	062861	S		
"	"	"	NWSW	" " 5	"	OW	SH	2519	3217	25	-698	156	121061	123061	S		
"	"	"	C-NWNE	C. Fritz 1	Midwest	OW	SH	2481	3148	23	-667	26	060161	070661	S		
"	"	"	C-SWNE	" " 2	"	OW	SH	2505	3197	24	-692	201	062061	071061	S		
"	"	"	C-SENW	" " 3	"	OW	SH	2516	3210	23	-694	27	062661	071161	S		
"	"	"	NENW	" " 4	"	OW	SH	2509	3182	22	-673	82	081261	090961	S		
"	"	"	C-SWNW	" " 6	"	OW	SH	2465	3153	16	-688	210	010562	012262	S		
24	3	27	C-SWSE	Burton 1	Texaco	DA	SH	2397	3088	23	-691	-	092361	101361	S		
"	"	"	C-SWSW	Kennedy 2	Skelly	WI	SH	2488	3185	24	-697	48	050861	052661	S		
"	"	"	SESW	Baston 1	Champlin	WI	SH	2478	3168	22	-690	27	042561	051861	S		
"	"	"	C-NESW	" 2	"	WI	SH	2433	3126	23	-693	-	103161	111061	-		
25	3	27	C-SESW	Barth 1	Murfin	OW	SH	2485	3169	21	-684	144	051060	051660	S		
"	"	"	C-NESW	" 2	" & Jones	WI	SH	2410	3100	22	-690	40	100861	101261	S		
"	"	"	SWNW	" 1	Midwest	OW	SH	2488	3178	28	-690	205	042461	051061	S		
"	"	"	C-NWNW	" 2	"	WI	SH	2512	3202	22	-690	203	042661	052461	S		
"	"	"	SENW	" 3	"	WI	SH	2484	3170	22	-686	160	082961	091661	S		
"	"	"	NENW	" 4	"	WI	SH	2452	3152	21	-700	192	082561	090661	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
25	3	27	C-SWSW	Fritz 1	Midwest	OW	SH	2449	3141	21	-692	27	082760	071761	S		
"	"	"	NWSW	" 6	"	WI	SH	2496	3186	22	-690	159	090461	091761	S		
"	"	"	C-SWSE	Lang 1	Skelly	OW	SH	2510	3199	21	-689	134	092960	101460	S		
"	"	"	C-SESE	" 2	"	WI	SH	2424	3116	22	-692	216	101860	103160	S		
"	"	"	C-NWSE	" 3	"	DA	SH	2452	3145	22	-693	-	041961	042661	-		
26	3	27	C-SWSE	Fritz 2	Midwest	OW	SH	2544	3227	25	-683	180	120260	122160	S		
"	"	"	C-NWSE	" 3	"	OW	SH	2529	3218	23	-689	206	032461	040661	S		
"	"	"	SESE	" 4	"	WI	SH	2515	3204	21	-689	95	031061	032161	S		
"	"	"	NESE	" 5	"	OW	SH	2491	3177	22	-686	205	040761	042161	S		
"	"	"	C-SWNE	Kennedy 1	Skelly	OW	SH	2498	3198	22	-700	252	031061	033061	S		
"	"	"	C-SENE	" 2	"	OW	SH	2519	3220	23	-701	252	032961	042261	S		
"	"	"	C-NENE	" 3	"	OW	SH	2493	3190	22	-697	243	040761	042761	S		
"	"	"	C-NWNE	" 4	"	OW	SH	2493	3189	21	-696	253	042661	051661	S		
"	"	"	C-SENW	Schaffert A-1	Midwest	OW	SH	2553	3248	13	-695	205	032561	033161	S		
"	"	"	C-SWNW	" A-2	"	OW	SH	2466	3160	23	-694	150	033161	041761	S		
"	"	"	C-NWNW	" A-3	"	OW	SH	2528	3221	24	-693	204	043061	060161	S		
"	"	"	NENW	" A-4	"	OW	SH	2551	3248	22	-697	201	050961	060961	S		
"	"	"	SESW	" 1-1	"	OW	SH	2551	----	--	----	80	031661	032961	S		
"	"	"	SWSW	" 2-2	"	OW	SH	2585	----	--	----	70	032161	040361	S		
"	"	"	C-SESW	" 1	"	WI	SH	2547	3236	21	-689	168	121260	122360	S		
"	"	"	C-SWSW	" 2	"	OW	SH	2577	3268	18	-691	170	122260	011161	S		
"	"	"	C-NWSW	" 3	"	OW	SH	2537	3228	23	-691	160	020861	021661	S		
"	"	"	C-NESW	" 4	"	OW	SH	2546	3238	22	-692	165	021461	022861	S		
27	3	27	NWSW	Barber 1	"	WI	SH	2486	3189	25	-703	75	123060	011461	S		
"	"	"	C-SESW	" 2	"	WI	SH	2425	3124	25	-699	120	022261	031361	S		
"	"	"	NESW	" 3	"	OW	SH	2441	3144	23	-703	201	091361	100461	S		
"	"	"	SWSW	" 4	"	WI	SH	2472	3181	23	-709	203	091761	100561	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
27	3	27	C-SENE	A. Fritz 1	Midwest	OW	SH	2568	3162	22	-694	155	033061	041761	S		
"	"	"	NENE	" " 2	"	OW	SH	2508	3206	25	-698	195	081961	090161	S		
"	"	"	C-SWNE	M. Fritz 1	Skelly	WI	SH	2504	3216	22	-712	129	032161	041761	S		
"	"	"	NWNE	" " 2	"	WI	SH	2452	3152	24	-700	146	081261	081761	S		
"	"	"	SENW	" " 3	"	WI	SH	2424	3136	22	-712	3	082461	090761	S		
"	"	"	SESE	Barber C-1-1	Midwest	OW	SH	2558	----	--	----	140	031961	033061	S		
"	"	"	C-SESE	" C-1	"	OW	SH	2556	3248	23	-692	250	012061	020361	S		
"	"	"	C-SWSE	" C-2	"	OW	SH	2479	3170	24	-691	160	012461	021861	S		
"	"	"	C-NESE	" C-3	"	OW	SH	2509	3203	22	-694	156	020161	021461	S		
"	"	"	NWSE	" C-4	"	OW	SH	2489	3186	23	-697	155	040561	042461	S		
28	3	27	C-SESE	Fidnarik A-1	Murfin	OW	SH	2524	3231	21	-707	12	051562	052062	S		
"	"	"	C-SESW	Stoney 1	Taylor	DA	WC	2510	3226	22	-716	-	120864	121564	-		
"	"	"	C-NWNE	Trosper 1	M. & B.	DA	WC	2517	3221	25	-704	-	091362	091862	-		
29	3	27	C-NENW	Sughroue 1	C. & F. Co.	DA	WC	2482	3190	22	-708	-	062662	071262	-		
30	3	27	C-SWSE	Foster 1	Murfin & M.	DA	WC	2491	----	--	----	-	040674	041274	-		
32	3	27	C-NWNE	Malleck 1	Kiel etal.	DA	WC	2430	3155	23	-725	-	073061	080461	-		
33	3	27	SENE	Fidnarik 1	Gulf	WI	SH	2510	3212	21	-702	143	032261	042961	-		
"	"	"	C-NWSE	" B-1	Murfin	DA	SH	2540	3244	21	-704	-	052262	052762	-		
"	"	"	SESE	Barber E-3	Midwest	WI	SH	2501	3199	21	-698	7	042161	061961	S		
"	"	"	C-NENE	Fidnarik 2	Gulf	OW	SH	2530	3234	21	-704	13	120261	120661	S		
"	"	"	NESE	Barber E-4	Midwest	WI	SH	2525	3224	22	-699	4	041561	071461	S		
34	3	27	C-SWSE	" A-1	"	OW	SH	2516	3203	21	-687	240	010761	012061	S		
"	"	"	NWSE	" A-2	"	OW	SH	2487	3174	21	-687	250	011361	012261	S		
"	"	"	C-SESW	" A-3	"	OW	SH	2538	3227	20	-689	170	020761	021561	S		
"	"	"	C-NESW	" A-4	"	OW	SH	2475	3164	22	-689	155	021761	031061	S		
"	"	"	C-NENE	" B-1	"	OW	SH	2526	3210	23	-684	300	011461	012161	S		
"	"	"	C-SENE	" B-2	"	OW	SH	2541	3228	22	-687	156	012061	020261	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
34	3	27	C-SWNE	Barber B-3	Midwest	OW	SH	2469	3156	20	-687	160	012561	020261	S		
"	"	"	C-NWNE	" B-4	"	OW	SH	2460	3150	21	-690	260	020161	021561	S		
"	"	"	C-SENW	" D-1	"	OW	SH	2443	3133	20	-690	110	030961	031761	S		
"	"	"	C-NENW	" D-2	"	OW	SH	2449	3146	22	-697	110	022861	031161	S		
"	"	"	SWNW	" D-3	"	WI	SH	2506	3200	21	-694	155	040261	041561	S		
"	"	"	C-NWNW	" D-4	"	WI	SH	2511	3206	22	-695	157	041816	050961	S		
"	"	"	C-SWSW	" E-1	"	WI	SH	2480	3167	23	-687	205	040761	042661	S		
"	"	"	NWSW	" E-2	"	OW	SH	2450	3142	21	-692	140	022461	031161	S		
"	"	"	SWSE	" A-1-1	"	OW	SH	2516	----	--	-----	196	021361	022061	S		
"	"	"	NWSE	" A-2-2	"	WI	SH	2487	----	--	-----	190	031161	031661	S		
"	"	"	SESW	" A-3-3	"	OW	SH	2538	----	--	-----	185	030561	031061	S		
"	"	"	NENE	" B-1-1	"	WI	SH	2528	----	--	-----	165	031861	032661	S		
"	"	"	SENE	" B-2-2	"	OW	SH	2541	-----	--	-----	175	031361	032261	S		
"	"	"	SWNE	" B-3-3	"	OW	SH	2472	-----	--	-----	75	031461	032461	S		
"	"	"	NWNE	" B-4-4	"	OW	SH	2482	----	--	-----	70	032561	040461	S		
"	"	"	SWSW	" E-1-1	"	WI	SH	2478	----	--	-----	90	090961	091661	S		
"	"	"	SESE	Harsch 2	Ohio	OW	SH	2522	3210	21	-688	331	121860	011761	M		
"	"	"	C-NESE	" 7	"	OW	SH	2462	3148	22	-686	270	010361	021761	M		
"	"	"	NESE	S. H. 129	Midwest	OW	SH	2465	3143	23	-678	755	090968	102368	S		
35	3	27	SESE	Fritz A-1-1	"	OW	SH	2559	-----	--	-----	104	021161	021861	S		
"	"	"	C-NESE	" A-2-2	"	OW	SH	2535	-----	--	-----	147	113160	121160	S		
"	"	"	C-SWNE	" A-3-3	"	OW	SH	2543	3228	22	-685	170	110660	111960	S		
"	"	"	NWNE	" A-4-4	"	OW	SH	2538	-----	--	-----	154	030161	031161	S		
"	"	"	SENE	" A-5-5	"	OW	SH	2500	-----	--	-----	152	022161	022961	S		
"	"	"	NENE	" A-6-6	"	OW	SH	2493	-----	--	-----	120	022561	030461	S		
"	"	"	C-SESE	" A-1	"	WI	SH	2554	3240	26	-686	135	092460	101360	S		
"	"	"	C-NESE	" A-2	"	WI	SH	2535	3225	24	-690	152	021661	030361	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
35	3	27	C-NWNE	Fritz A-4	Midwest	OW	SH	2533	3220	22	-687	120	112660	121260	S		
"	"	"	C-SENE	" A-5	"	WI	SH	2503	3185	23	-682	175	111360	112160	S		
"	"	"	C-NENE	" A-6	"	OW	SH	2486	3173	27	-687	155	111960	120660	S		
"	"	"	C-NWSE	Hayes 35-10	Pubco	OW	SH	2549	3233	24	-684	300	102160	103160	S		
"	"	"	NWSE	" B 35-10	"	OW	SH	2549	----	--	----	122	012561	020461	S		
"	"	"	C-NESW	" 35-11	"	OW	SH	2563	3242	21	-679	300	112860	120660	S		
"	"	"	NESW	" B 35-11	"	OW	SH	2563	----	--	----	250	010261	011061	S		
"	"	"	SESW	" 35-14	"	OW	SH	2542	----	--	----	300	111860	112960	S		
"	"	"	SESW	" B 35-14	"	OW	SH	2542	3228	23	-686	180	020361	021061	S		
"	"	"	C-SWSE	" 35-15	"	OW	SH	2566	3250	21	-684	300	100860	101960	S		
"	"	"	SWSE	" B 35-15	"	OW	SH	2568	----	--	----	180	121760	010161	-		
"	"	"	SWSW	Harsch 1	Ohio	OW	SH	2501	3188	22	-687	161	120860	121660	M		
"	"	"	C-NENW	" 3	"	OW	SH	2575	3265	22	-690	167	121860	122260	M		
"	"	"	C-SENW	" 4	"	OW	SH	2568	3259	25	-691	75	122360	022461	S		
"	"	"	C-NWSW	" 5	"	OW	SH	2538	3221	21	-683	160	122660	031061	M		
"	"	"	C-NWNW	" 6	"	OW	SH	2565	3256	21	-691	27	123160	021761	M		
"	"	"	C-SWNW	" 8	"	OW	SH	2534	3222	26	-688	180	010761	011261	M		
"	"	"	SWNW	S.H.L.U. 35-5	"	OW	SH	2552	3238	19	-686	142	113070	122370	S		
"	"	"	NENW	S.H.R.U. 102	Midwest	OW	SH	2575	3256	24	-681	110	092468	103068	S		
"	"	"	SWSW	" 141	"	OW	SH	2515	3196	24	-681	216	091768	103168	S		
36	3	27	NENW	State 1-36	U.S. Smelt.	OW	SH	2508	3197	21	-689	115	090760	091360	S		
"	"	"	SWSW	" 2-36	" "	WI	SH	2567	3264	22	-697	108	091460	100560	S		
"	"	"	C-SENW	" 3-36	" "	WI	SH	2535	3228	20	-693	-	092260	103160	-		
"	"	"	C-NWSW	" 4-36	" "	WI	SH	2527	3229	21	-702	145	100160	110260	S		
"	"	"	SWNW	" 5-36	" "	OW	SH	2499	3196	22	-697	116	120460	121660	S		
"	"	"	NWNW	" 6-36	" "	OW	SH	2479	3171	24	-692	120	121360	122360	S		
"	"	"	SESW	" 7-36	" "	OW	SH	2549	3252	24	-703	199	123160	030261	S		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
36	3	27	SWNE	State 8-36	U.S. Smelt.	DA	SH	2531	3219	21	-688	-	050362	050862	-		
"	"	"	C-NWNE	" 1	Kirk etal.	OW	SH	2523	3208	22	-685	250	110960	112360	S		
"	"	"	C-NENE	" 2	Murfin	WI	SH	2480	3166	22	-686	-	112960	120560	-		
"	"	"	C-NENE	" 3	Murfin&Jones	OW	SH	2477	3164	22	-687	30	101461	101861	S		
1	3	28	C-NESE	Hotze 1	Nat. Assoc.	DA	WC	2482	3188	17	-706	-	030860	031760	-		
2	3	28	C-SENW	Mihm 1	Amerada	DA	WC	2492	3203	15	-711	-	010662	011362	-		
3	3	28	C-NENE	" 1	Midwest	DA	WC	2475	3195	17	-720	-	032666	033166	-		
7	3	28	C-NWNW	Randel 1	Burch	DA	WC	2546	3321	17	-775	-	102161	102961	-		
9	3	28	C-SENW	Longrecker 1	Murfin	DA	WC	2531	3257	15	-726	-	061961	062561	-		
11	3	28	SWSW	Winters 1	J.&C., S.D.	DA	WC	2432	3142	25	-710	-	090576	120476	-		
13	3	28	C-SESE	Baumbach 1	P.V. & T.	DA	WC	2373	3099	12	-726	-	080968	081768	-		
16	3	28	C-SESW	Ruggles 1	Gray & E.	DA	WC	2410	3124	13	-714	-	082163	082763	-		
22	3	28	C-SESW	Jones 1	E.L.K.	DA	WC	2424	3135	13	-711	-	071861	072761	-		
24	3	28	C-NWSE	Esch 1	P.V. & T.	AD	WC	2528	3245	17	-717	15	092368	101668	S		
"	"	"	C-NWNW	Luther 1	Stoep. & T.	DA	WC	2379	3105	13	-726	-	112768	120468	-		
25	3	28	C-SWSE	Lord 1	Okmar	DA	WC	2537	3237	23	-700	-	012761	020261	-		
26	3	28	C-NENW	Baumbach 1	Nat. Assoc.	DA	WC	2498	3222	16	-724	-	101461	102061	-		
29	3	28	C-SENW	Brady 1	K. & M.	DA	WC	2428	3150	12	-722	-	041062	041962	-		
30	3	28	C-SWSW	Norris 1	K. & E.	DA	WC	2439	3175	12	-736	-	060761	061361	-		
"	"	"	C-SWSE	" 1	Taylor	DA	WC	2462	3186	14	-724	-	072064	072664	-		
32	3	28	NWNW	Crocker 1	Marathon	DA	WC	2513	3229	15	-716	-	041664	042264	-		
33	3	28	NENE	Gettman 1	Volentine	DA	WC	2515	3207	16	-692	-	100258	101058	-		
34	3	28	C-SESE	Kunkee 1	Farmer	DA	WC	2540	3219	24	-679	-	102269	102869	-		
3	3	29	C-NWNW	Neel 1	K. & E.	DA	WC	2588	3393	17	-805	-	051061	051861	-		
5	3	29	SESW	Schow 1	Stoeppel.	DA	WC	2646	3550	17	-904	-	112966	120866	-		
"	"	"	C-SWNW	Schow A-1	Strata	DA	WC	2651	3545	21	-894	-	031761	032761	-		
"	"	"	C-NENE	" B-1	"	DA	WC	2651	3519	19	-868	-	072661	080561	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IP BOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
6	3	29	SESW	McNeely 1	Miami	DA	WC	2654	3586	20	-932	-	070567	071367	-		
11	3	29	C-NWSW	Couse 1	Empire	DA	WC	2595	3392	18	-797	-	092870	100570	-		
17	3	29	C-SWNE	Schow 1	Strata	DA	WC	2581	3483	12	-902	-	111060	111960	-		
22	3	29	C-NWNE	Potthoff 1	Volentine	DA	WC	2560	----	--	----	-	101658	103158	-		
27	3	29	C-SESE	Stillman 27-1	Terra	DA	WC	2454	3229	11	-775	-	100971	101571	-		
32	3	29	SWNWSE	Wilcox 1	Hollings.	DA	WC	----	----	--	----	-	-------	062746	-		
2	3	30	C-SWSE	Pearson 1	Farmer	DA	WC	2586	3570	20	-984	-	102761	110861	-		
3	3	30	C-NWSE	Fugua 1	Tenneco	DA	WC	2602	3585	19	-983	-	081362	082262	-		
7	3	30	C-NWNE	Fassler 1	Marathon	DA	WC	2658	3619	12	-961	-	022263	030263	-		
9	3	30	C-NWSW	Rothe 1	Empire	DA	WC	2652	3623	19	-971	-	041976	042976	-		
10	3	30	C-SWSW	Wegener 1	"	DA	WC	2568	3554	20	-986	-	082771	090371	-		
22	3	30	C-SENE	Olson 1	Gilbert	DA	WC	2595	3600	18	1005	-	080656	081556	-		
29	3	30	C-NWNW	Sutton 1-29	E.,B. & C.	DA	WC	2528	3513	17	-985	-	101761	103061	-		
32	3	30	C-SESE	Stevens 1	Wadley	DA	WC	2710	3685	19	-975	-	110459	111459	-		
35	3	30	C-SESW	Sutton 1	Geochemical	DA	WC	2508	3451	18	-943	-	022362	030362	-		
3	4	26	NWNW	Weir A-1	Texaco	DA	WC	2466	3010	26	-544	-	080361	081061	-		
8	4	26	C-SENW	Walkington 1	Smith	DA	WC	2521	3148	15	-627	-	110463	111063	-		
11	4	26	C-SESE	Kelly 1	Interstate	DA	WC	2406	3056	18	-650	-	042961	050761	-		
16	4	26	NWSE	Bede 1	Murfin & V.	DA	WC	2487	3088	16	-601	-	090761	091161	-		
26	4	26	C-SWNE	Kester 1	Okmar	DA	WC	2420	3081	28	-661	-	022861	030661	-		
29	4	26	C-NENE	Durner 1	Interstate	DA	WC	2401	3050	16	-649	-	041861	042661	-		
31	4	26	C-NWSE	Stritt 1	Pan Am	DA	WC	2365	3012	15	-647	-	120463	121163	-		
32	4	26	C-SESE	Mues 1	Rains & W.	DA	WC	2344	3002	27	-658	-	032363	033063	-		
34	4	26	NENW	Trumble 1	Platte Val.	DA	WC	2411	3045	25	-634	-	092467	093067	-		
3	4	27	C-SWNE	Moore 1	Franco Cen.	DA	WC	2519	3154	20	-635	-	062960	070560	-		
"	"	"	C-SWNE	" 1	White & Fry	DA	WC	2519	----	--	----	-	011862	012462	-		
7	4	27	C-SESW	Randel 1	Simmons	DA	WC	2602	3271	13	-669	-	120161	120661	-		

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12	4	27	C-SWNE	Kehr 1	Miami	DA	WC	2490	3125	13	-635	-	032961	040561	-		
15	4	27	C-NENE	Rosier B-1	"	DA	WC	2448	3099	16	-651	-	032561	033161	-		
17	4	27	C-NWSW	Schmidt 1	Taylor	DA	WC	2529	3201	13	-672	-	101063	101563	-		
20	4	27	C-SESE	Cafferty 1	Coleman	OW	WC	2516	3181	14	-665	7	120966	020967	S		
24	4	27	C-NENW	Moore 1	Interstate	DA	WC	2490	3149	17	-659	-	033161	041461	-		
25	4	27	C-SWSW	Callen 1	R., W. & M.	DA	WC	2403	3087	16	-684	-	032461	033061	-		
27	4	27	C-SWNW	Neuman A-1	McAlester	DA	WC	2505	3192	14	-687	-	122861	010562	-		
28	4	27	C-NWNW	Sughroue 1	Stoeppel.	DA	FD	2512	----	--	----	-	101367	122067	-		
"	"	"	C-SESW	Schmidt 1	Kirk & S.	OW	WC	2500	3194	16	-694	8	120262	121062	S		
29	4	27	C-SWNE	Wyrick 1	Lewis	DA	WC	2520	3199	23	-679	-	060961	061561	-		
31	4	27	NENW	Schul. etal.1	Taylor	DA	WC	2544	3246	20	-702	-	041568	042368	-		
33	4	27	NWNW	Sughroue 1	Coleman	AP	FD	2427	3126	21	-699	-	102668	110868	S		
34	4	27	NWNE	Stewart 1	Elder & Y.	DA	WC	2489	3184	16	-695	-	022767	030467	-		
6	4	28	C-SESE	Zink 1	Burch	DA	WC	2645	3399	14	-754	-	100161	101161	-		
10	4	28	C-SWSW	Ernst 1	B., B. & M.	DA	WC	2659	3370	15	-711	-	091360	092660	-		
13	4	27	C-SWNW	McCollum 1	Indianola	DA	WC	2578	----	--	----	-	122750	041251	-		
14	4	28	C-SWSWSE	Anderson 1	"	DA	WC	2547	3207	17	-660	-	070753	071753	-		
17	4	28	C-NWNW	Keen 1	Okmar	DA	WC	2621	3374	15	-753	-	021261	021961	-		
"	"	"	C-SWSE	Kircher 1	Indianola	DA	WC	----	----	--	----	-	------	101150	-		
21	4	28	C-NWSW	" 1	Waggoner	DA	WC	2613	3322	16	-709	-	050863	051463	-		
23	4	28	SENENW	Reiners 1	Indianola	DA	WC	2553	3210	17	-657	-	072153	073053	-		
24	4	28	C-SENE	Schmidt 1	Burch	DA	WC	2559	3216	18	-657	-	090160	091060	-		
25	4	28	C-SESENE	Gehring 1	Palensky	DA	WC	2574	----	--	----	-	090452	091252	-		
26	4	28	C-NESW	Carmichael 1	Clayton	DA	WC	2537	3234	18	-697	-	082075	082675	-		
"	"	"	C-SWSW	" 1	Jordan	DA	WC	2565	3262	21	-697	-	061061	061761	-		
27	4	28	C-NENW	Kircher 1	Okmar	DA	WC	2558	3252	18	-694	-	022061	022761	-		
"	"	"	SESW	" 1-X	Alpine	DA	WC	2477	3192	23	-715	-	122061	122961	-		

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29	4	28	C-SENE	Kircher 1	Tenneco	DA	WC	2587	3293	14	-706	-	110262	111062	-		
30	4	28	SENE	Masters 1	Nebr. Drl.	DA	WC	2552	3286	14	-734	-	010261	010861	-		
34	4	28	C-SENE	England 1	Farmer	DA	WC	2516	3224	21	-708	-	061572	062572	-		
"	"	"	C-NESE	Nelms 1	F. & M.	DA	WC	2512	3230	20	-718	-	030861	031561	-		
35	4	28	C-NESW	Mihm 1	K. & M.	DA	WC	2510	3220	20	-710	-	042172	042772	-		
5	4	29	NWSW	Swanson B-1	Taylor	DA	BC	2523	3250	16	-727	-	092667	100467	-		
6	4	29	NENW	Doyle 1	Pubco	OW	BC	2560	3486	14	-926	110	060766	070466	S		
"	"	"	W½NW	" 2	"	OW	BC	2599	3576	13	-977	43	020867	031567	S		
"	"	"	NWNW	" A-2	"	AP	BC	2550	----	--	-----	102	031571	040871	S		
"	"	"	C-NENE	Stevens 1	Taylor	DA	WC	2601	3369	15	-768	-	042166	042866	-		
"	"	"	NESW	Koetter 1	"	OW	BC	2512	3442	17	-930	30	062166	071066	S		
"	"	"	NESE	" B-1	"	OW	BC	2508	----	--	----	38	072566	081466	S		
"	"	"	NWSE	" 2	"	TA	BC	2542	3471	21	-929	72	070466	071766	M		
"	"	"	SENE	" B-2	Pubco	OW	BC	2526	----	--	----	60	080466	082166	S		
"	"	"	SWNE	" 3	Taylor	OW	BC	2534	3460	15	-926	10	120663	010969	S		
7	4	29	NENW	" 6	S., J. & C.	DA	BC	2631	3560	14	-929	-	110674	111674	-		
"	"	"	SESE	" B-4	Taylor	DA	WC	2630	----	--	----	-	102666	110166	-		
8	4	29	C-SENW	Swanson 1	Akmar	DA	WC	2522	3240	17	-718	-	102368	110568	-		
"	"	"	NENE	Cain 1	Taylor	DA	WC	2520	3247	15	-727	-	102766	011067	-		
14	4	29	C-NESE	Dack 1	"	DA	WC	2586	3371	13	-785	-	090867	091467	-		
17	4	29	SENW	Cain 1	U.S. Smelt.	DA	WC	2650	3391	19	-741	-	012463	020163	-		
18	4	29	C-SWNW	Koetter 1	Mon. & T.	DA	WC	2716	3656	19	-940	-	113064	120764	-		
"	"	"	SESE	" 18-2	Taylor	DA	WC	2690	3648	17	-958	-	051368	051968	-		
20	4	29	C-NWNW	" 1	Clayton	DA	WC	2710	3596	20	-886	-	100675	101475	-		
22	4	29	C-SWNW	Larington 1	Brinkerhoff	DA	WC	2528	3316	16	-788	-	081861	082361	-		
26	4	29	C-SWNW	Bartner 1	Kimbank	DA	WC	2563	3344	18	-781	-	031770	032670	-		
29	4	29	C-SESE	Hoyt 1	Taylor	DA	WC	2686	3512	21	-826	-	072968	080668	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
31	4	29	C-NWNWNW	Murphy 1	Mast	DA	WC	2738	3705	15	-967	-	062857	070657	-		
35	4	29	C-SWSW	Potthoff 1	Alpine & L.	DA	WC	2622	3415	13	-793	-	081961	082561	-		
36	4	29	SWSW	State 1	Nebr. Drl.	DA	WC	2570	3332	14	-762	-	121860	123160	-		
1	4	30	NENE	Doyle 1	Zenith	OW	BC	2523	3448	17	-925	75	011667	021867	S		
"	"	"	NWNE	" 2	"	OW	BC	2557	3483	17	-926	50	033167	042867	S		
"	"	"	C-E½E½	" 3	"	WI	BC	2521	3448	17	-927	-	042067	051767	-		
4	4	30	C-NESW	Madison 1	Burch	DA	WC	2764	3757	17	-993	-	042961	050761	-		
5	4	30	C-SESESE	Hakenvamp 1	Sauvage	DA	WC	2717	----	--	-----	-	060758	061658	-		
"	"	"	C-NWSW	" 1	Burch	OW	BG	2808	3801	13	-993	75	050360	062860	M		
"	"	"	C-SESW	" 2	"	OW	BG	2804	3801	13	-997	90	010761	022061	-		
6	4	30	C-NWNWSE	Barger 1	Gilbert	OW	BG	2768	3774	15	1006	198	051556	060956	S		
"	"	"	C-SWSE	" 2	"	OW	BG	2787	3779	17	-992	60	032760	062360	M		
"	"	"	C-NESE	" 3	"	OW	BG	2805	3796	16	-991	45	061260	061960	M		
"	"	"	C-SESE	" 4	"	OW	BG	2797	3791	15	-994	24	081960	101460	S		
"	"	"	C-SESW	Stephens 2	"	OW	BG	2744	3729	17	-985	138	082760	090360	M		
"	"	"	C-SENESW	" 46-6	Superior	OW	BG	2782	3767	16	-985	428	071456	072556	S		
"	"	"	C-SESENW	Potthoff 1	Gilbert	DA	BG	2793	3778	17	-985	-	081056	101956	-		
7	4	30	C-NWNW	Stephens 1	"	DA	BG	2800	3802	16	1002	-	020560	021660	-		
8	4	30	C-NENWSW	Hakenkamp 1	Poundstone	DA	BG	2782	3784	15	1002	-	102556	110656	-		
"	"	"	C-NWNW	" B-1	Rothmeier	AP	BG	2800	3796	16	-946	140	062160	071060	S		
"	"	"	C-SENESE	Thompson 1	L. Johnson	DA	BG	2782	3775	16	-993	-	082456	091056	-		
"	"	"	C-NWNE	" 1	Rothmeier	OW	BG	2778	3770	14	-992	27	090460	093060	M		
12	4	30	C-SWSWSE	Doyle 1	Volentine	DA	WC	2704	3646	16	-942	-	042557	050451	-		
14	4	30	C-SENW	Airport 1	Farmer	DA	WC	2770	3707	17	-937	-	010871	011871	-		
"	"	"	SWSW	State 14-13	Pubco	DA	WC	2765	3710	20	-945	-	060667	061467	-		
15	4	30	C-NENE	Klehn 1	Smith	DA	WC	2786	3726	13	-940	-	120563	121263	-		
"	"	"	NESE	Airfield 1-15	Murfin	DA	WC	2763	3701	15	-938	-	090976	022076	-		

SEC	TN	RW	LEGAL	WELL	OPERATOR	STATUS	FIELD	ELEV OF KB IN FT *EST	"B" DRILL DEPTH	"B" THICK	"B" ELEV	IPBOPD	SPUD DATE MODYYR	COMP DATE MODYYR	PROD M/S	PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT)	TOTAL
17	4	30	C-NESE	Hill 1	Blair & M.	DA	WC	2734	3738	15	1004	-	120261	121061	-		
24	4	30	C-SWSE	Schafer 1	Strata	DA	WC	2721	3683	18	-962	-	112060	112960	-		
27	4	30	C-SWSW	Commandery 1	Ohio	DA	WC	2707	3662	18	-955	-	041361	042361	-		
33	4	30	C-SWSE	Friehe 1	Burch & D.	DA	WC	2601	3559	18	-958	-	060761	061661	-		
35	4	30	C-NWSW	Schultz 1	Burch etal.	DA	WC	2692	3663	17	-971	-	032862	040562	-		
36	4	30	C-SWNE	Sch. Land F-1	Farmer	DA	WC	2738	3706	16	-968	-	072974	080574	-		

PLATE I

FRONTIER COUNTY

R. 30 W. R. 29 W. R. 28 W. R. 27 W. R. 26 W.

T. 4 N.

T. 3 N.

T. 2 N.

T. 1 N.

HITCHCOCK COUNTY

FURNAS COUNTY

RAWLINS COUNTY

DECATUR COUNTY

Barger

Bed Canyon

Fondo

Bartley

Indianola

Northwest

Sleepy Hollow

McCook

Sleepy Hollow

Bartley

North Ackman
(Abandoned 1974)

Paupers Ridge

School Creek

Ackman

Silver Creek
Combined with:
South Silver Creek (1963)
West Silver Creek (1963)
West Wolverine (1963)
Wolverine (1964)
Lebanon (old) (1964)

Poore
(Abandoned 1965)

Missouri Ridge

Kevil

Danbury

Zenith

South Danbury

Lebanon

Danbury

Midway
Combined with:
North Midway (1976)

Sink

Base

Lebanon

LOCATION OF OIL FIELDS, CROSS SECTIONS AND CORED WELLS PENETRATING THE B ZONE RED WILLOW COUNTY, NEBRASKA

44* Well with B zone core or description
Number refers to page in Appendix A.
x Indicates core examined for this study.

1 ——— 2 Line of Cross Section
(See plates II and III)

Outline of oil field

1 0 1 2 3 4 MILES

1 0 1 2 3 4 KILOMETERS

- DISCOVERY WELL
- LOCATION
- DRY HOLE
- GAS WELL
- ABANDONED GAS WELL
- OIL WELL
- ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY WELL

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April 1977

PLATE II

NORTH

SOUTH

6
KEHR No.1
MIAMI
C-SWNE
12-4N-27W
2490' K.B.
T.D. 3453'

7
C. FRITZ No.1
MIDWEST
C-NWNE
23-3N-27W
2481' K.B.
T.D. 3456'

8
DUTTON No.6
SKELLY
C-NWNE
14-2N-27W
2608' K.B.
T.D. 3614'

9
BREACH B-1
PLATTE VAL. & BURCH
C-SESE
34-2N-27W
2589' K.B.
T.D. 3608'

10
MARTIN No.1
CHRISTIE STEWART
C-NWNE
35-1N-27W
2553 K.B.
T.D. 3616'

Drill Depth

PERMIAN SYSTEM

PENNSYLVANIAN SYSTEM

PRECAMBRIAN

Foraker Formation

Admire Group

Wabaunsee Group

Shawnee Group

DATUM – Heebner Shale

Douglas Group

"B" Zone

Lansing – Kansas City Groups

Marmaton Group

"Granite Wash"

NORTH–SOUTH ELECTRIC–LOG CROSS SECTION OF THE INTERVAL BETWEEN THE TOPS OF THE ADMIRE GROUP AND THE PRECAMBRIAN RED WILLOW COUNTY, NEBRASKA

0 1 2 3 MILES

0 1 2 3 KILOMETERS

VERTICAL EXAGGERATION = 53

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LOCATION OF CROSS-SECTION

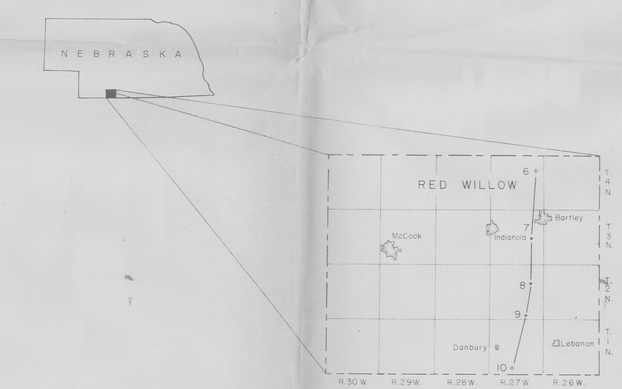


PLATE III

WEST

EAST

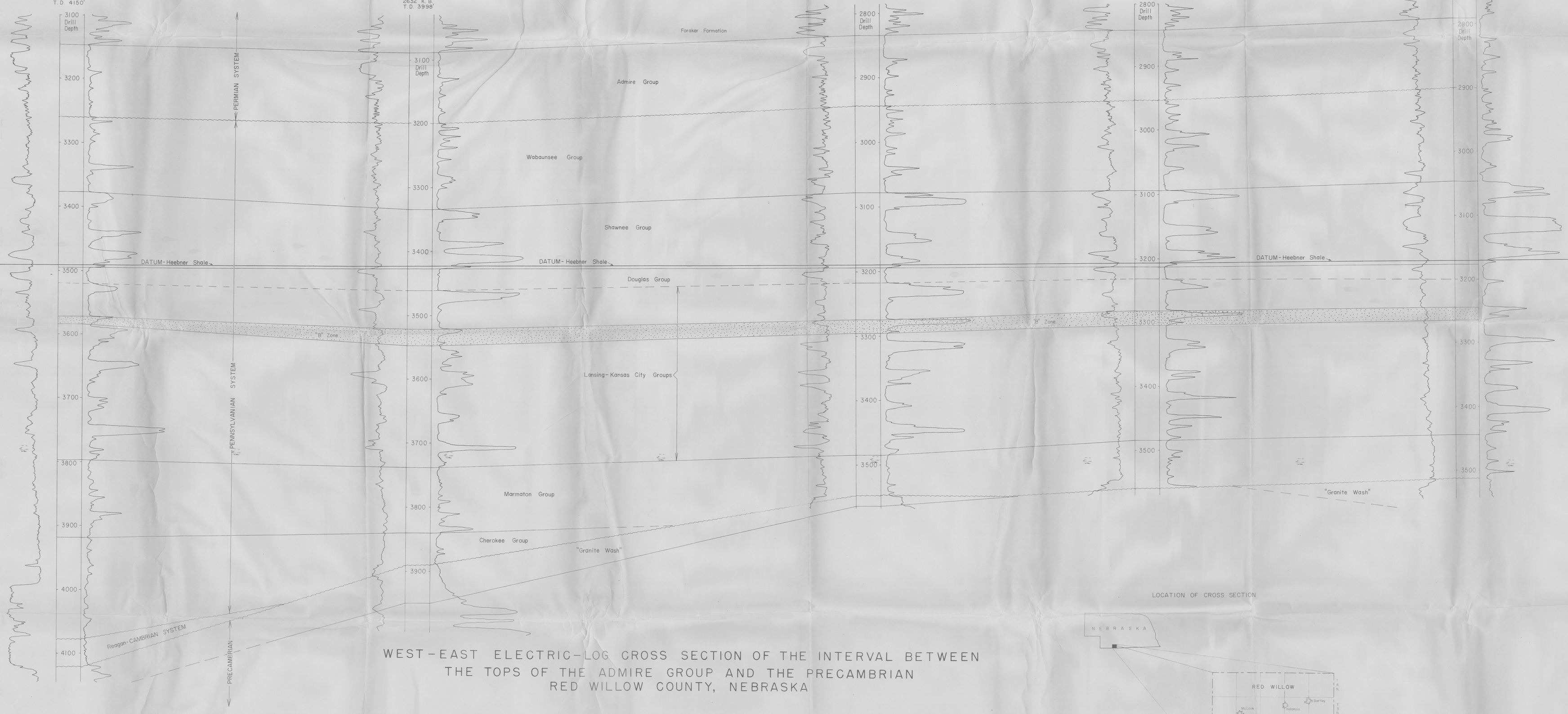
1
MYERS No. 1
HUBER
C-SE SE
18-2N-30W
2575' K.B.
T.D. 4150'

2
STATE No. 1
FARMER
C-NW NW
16-2N-29W
2632' K.B.
T.D. 3998'

3
SUGHROUE No. 2
SKELLY
C-SW SW
12-2N-28W
2567' K.B.
T.D. 3569'

4
DUTTON No. 10
SKELLY
C-SE SE
12-2N-27W
2561' K.B.
T.D. 3572'

5
LEMASTER No. 1
PLYMOUTH
C-SE SE
13-2N-26W
2500' K.B.
T.D. 3547'



WEST-EAST ELECTRIC-LOG CROSS SECTION OF THE INTERVAL BETWEEN THE TOPS OF THE ADMIRE GROUP AND THE PRECAMBRIAN RED WILLOW COUNTY, NEBRASKA

0 1 2 3 MILES

0 1 2 3 KILOMETERS

VERTICAL EXAGGERATION = 80X

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LOCATION OF CROSS SECTION

PLATE IV

R. 28 W. R. 27 W. R. 26 W.

T. 3 N.

T. 2 N.

T. 1 N.

Indianola

Bartley

Danbury

Lebanon

THICKNESS OF THE INTERVAL BETWEEN THE TOPS OF THE STONE CORRAL FORMATION AND THE B ZONE PART OF RED WILLOW COUNTY, NEBRASKA

1280
THICKNESS LINE
Interval is 10 feet

1230
CLOSED AREA OF THINNING

- LOCATION
- DRY HOLE
- OIL WELL
- ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY WELL

1274
CONTROL POINT
Number is thickness of the Stone Corral – B zone interval

0 2 MILES
0 2 KILOMETERS

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PLATE V

FRONTIER COUNTY

R. 30 W. R. 29 W. R. 28 W. R. 27 W. R. 26 W.

T. 4 N.

T. 3 N.

T. 2 N.

T. 1 N.

HITCHCOCK COUNTY

FURNAS COUNTY

RAWLINS COUNTY

DECATUR COUNTY

McCook

Indianola

Bartley

Danbury

Lebanon

N

25
Thickness line
Interval is 5 feet

20
Closed area of thinning

25
Control point
Number is thickness of the B zone

THICKNESS OF THE B ZONE
RED WILLOW CONTY, NEBRASKA

1 0 1 2 3 4 MILES

1 0 1 2 3 4 KILOMETERS

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- LOCATION
- DRY HOLE
- GAS WELL
- ABANDONED GAS WELL
- OIL WELL
- ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY WELL

PLATE VI

REGIONAL STRUCTURE OF THE B ZONE
RED WILLOW COUNTY, NEBRASKA

FRONTIER COUNTY

R. 30 W. | R. 29 W. | R. 28 W. | R. 27 W. | A R. 26 W.

T. 4 N. | T. 3 N. | T. 2 N. | T. 1 N.

HITCHCOCK COUNTY

FURNAS COUNTY

RAWLINS COUNTY

DECATUR COUNTY

B | C

Barger

Bed Canyon

McCook

Indianola

Northwest Sleepy Hollow

Sleepy Hollow

Bartley

Ackman

Silver Creek

Missouri Ridge

Danbury

South Danbury

Danbury Midway

Lebanon

Base Sink

N

Anticlinal Axis

-1025 Structure contour
Contour interval is 25 feet
Datum is mean sea level

-750 Closed area of lower structure

-1044 Control point
Number is elevation of the B zone
Values shown only for dry holes
(No value - data unavailable)

0 1 2 3 4 MILES

0 1 2 3 4 KILOMETERS

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- LOCATION
- DRY HOLE
- GAS WELL
- ABANDONED GAS WELL
- OIL WELL
- ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY WELL

PLATE VII

R. 28 W. R. 27 W. R. 26 W.

T. 3 N. T. 2 N. T. 1 N.

Indianola Bartley Northwest Sleepy Hollow Sleepy Hollow Ackman Silver Creek Missouri Ridge Danbury South Danbury Midway Base Sink Lebanon

DETAILED STRUCTURE OF THE B ZONE PART OF RED WILLOW COUNTY, NEBRASKA

-800

STRUCTURAL CONTOUR

Contour interval is 5 feet
Datum is mean sea level

-750

CLOSED AREA OF LOWER STRUCTURE

- ◦ LOCATION
- ✧ DRY HOLE
- • OIL WELL
- ✧ ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY WELL

•736

CONTROL POINT

Number is elevation of the B zone
(No number – data unavailable)

1 0 1 2 MILES

1 0 1 2 KILOMETERS

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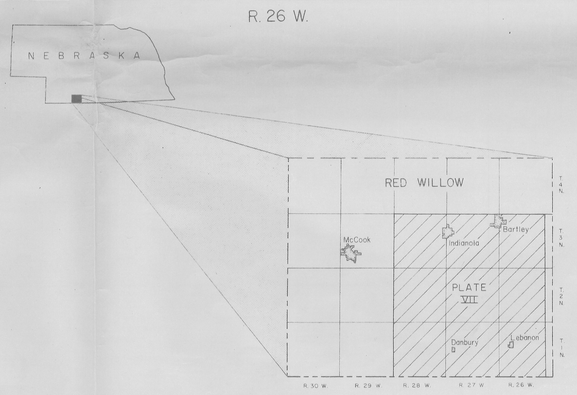

PLATE VIII

TOTAL THICKNESS OF PRODUCING INTERVALS IN THE B ZONE SOUTHEASTERN RED WILLOW COUNTY, NEBRASKA

—— 10 ——
THICKNESS LINE
Interval is 5 feet

•6
CONTROL POINT
Well producing from B zone
Number is total thickness of producing intervals in the B zone

X
GENERAL AREA WORTHY OF FURTHER DETAILED ANALYSIS

- ○ LOCATION
- ✧ DRY HOLE
- • OIL WELL
- ✗ ABANDONED OIL WELL
- WI WATER INJECTED
- WS WATER SUPPLY

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April 1977

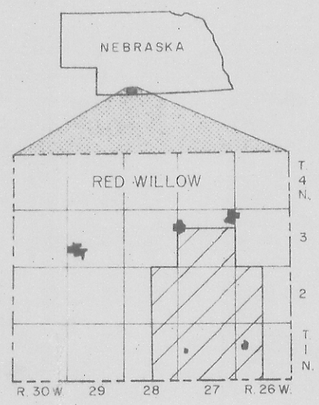
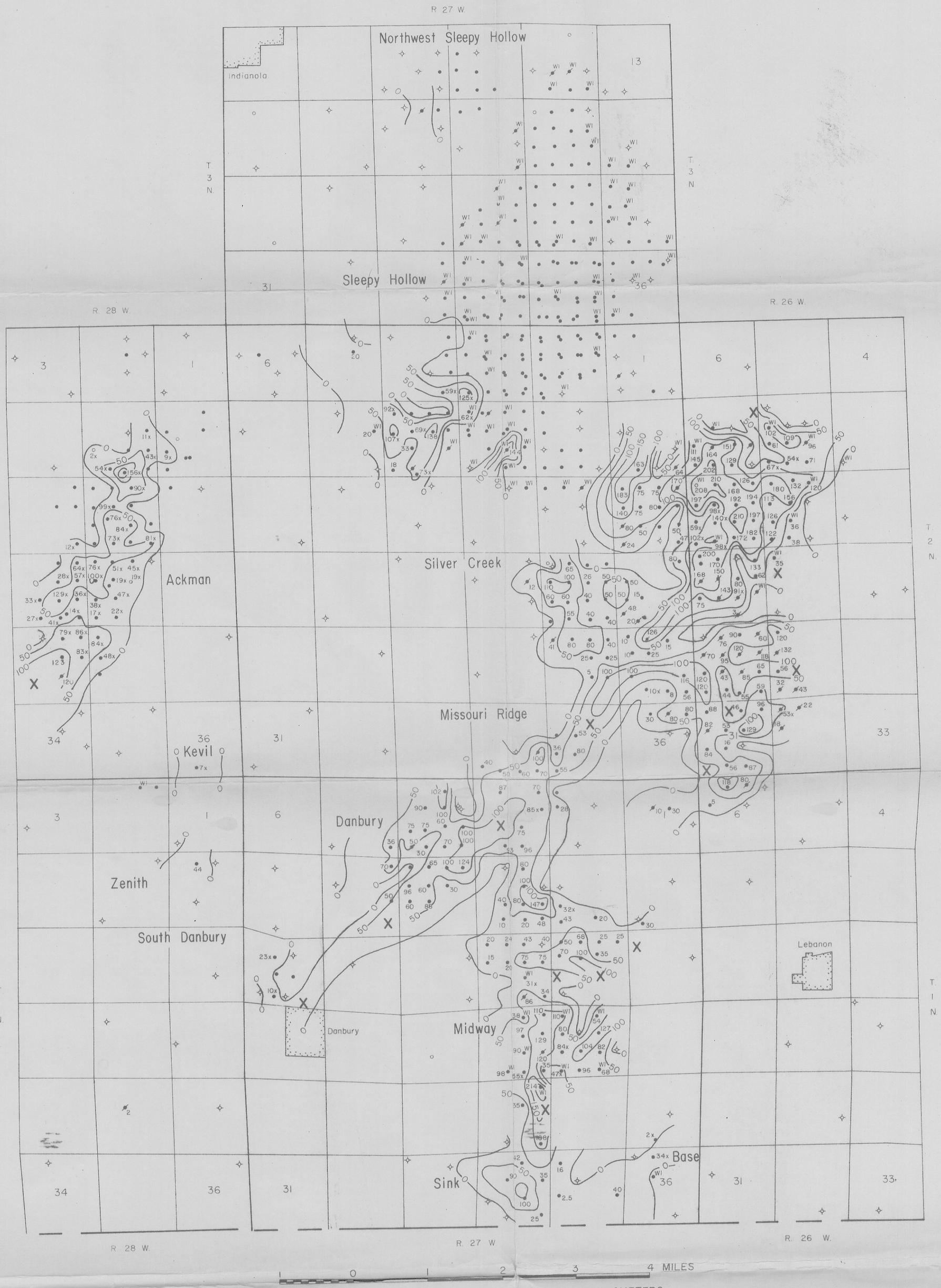


PLATE IX

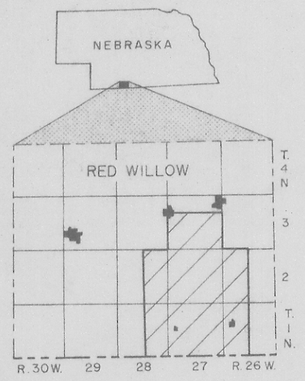


INITIAL (24-HOUR) B ZONE PRODUCTION FROM SELECTED WELLS SOUTHEASTERN RED WILLOW COUNTY, NEBRASKA

—10— LINE OF EQUAL INITIAL PRODUCTION (IP) IN BARRELS OF OIL PER DAY (BOPD)
Interval is 50 IP BOPD

•96x CONTROL POINT
Number is IP BOPD
x indicates estimated IP BOPD
see text for methods of calculation

X GENERAL AREA WORTHY OF FURTHER DETAILED ANALYSIS

○ LOCATION
✧ DRY HOLE
• OIL WELL
✓ ABANDONED OIL WELL
WI WATER INJECTED

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