

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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and

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## 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  $3^{\circ}$ - $4^{\circ}$  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.

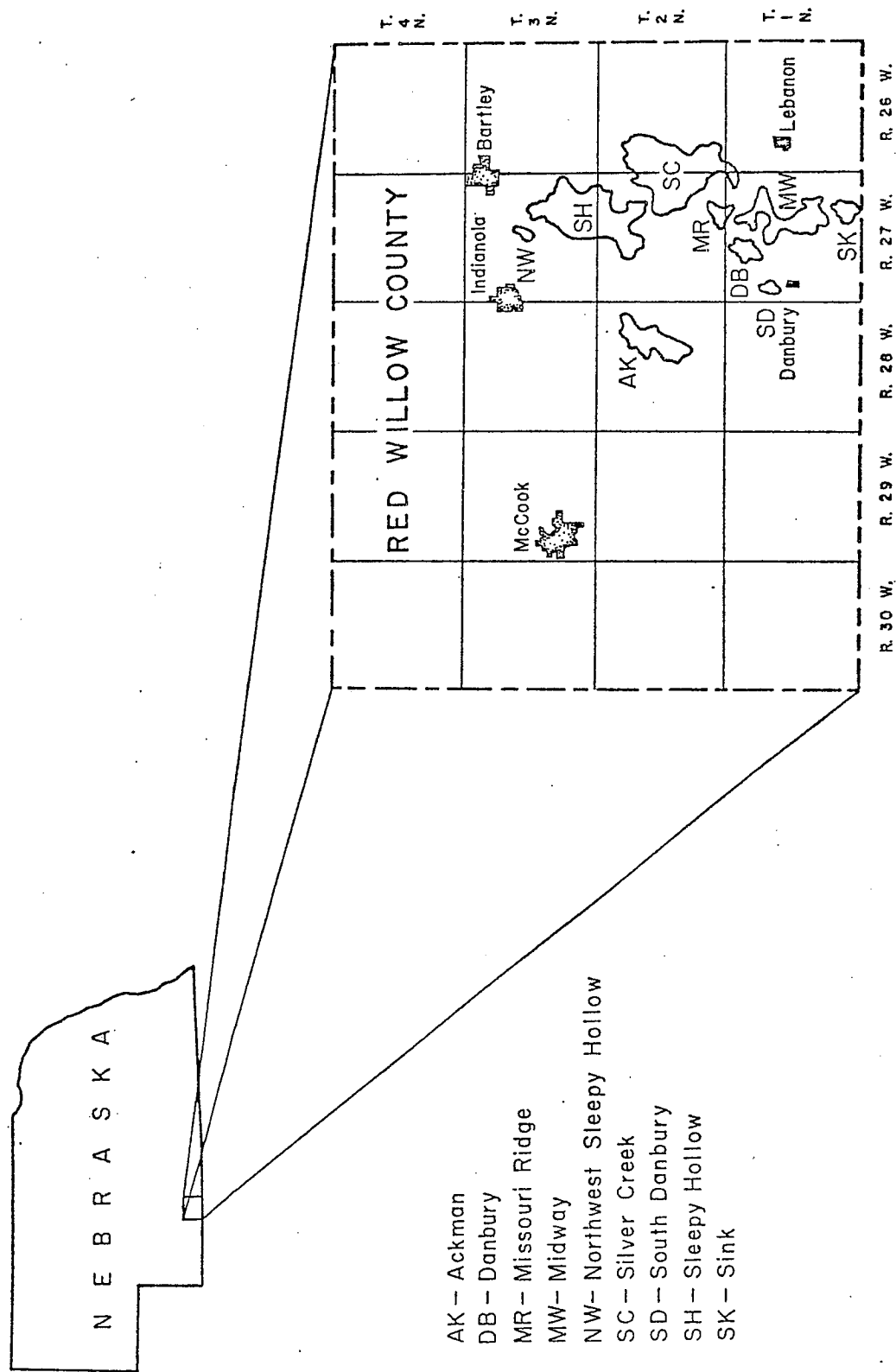


Figure 1. Map showing location of study area and major oil fields producing from the B zone.

TABLE 1

## CUMULATIVE PRODUCTION OF OIL FIELDS IN RED WILLOW COUNTY, NEBRASKA

| FIELD            | DISCOVERY      | CUMULATIVE PRODUCTION                        |
|------------------|----------------|----------------------------------------------|
|                  | MONTH YEAR     | IN BARRELS OF OIL<br>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 ratio 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 overlaps 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)

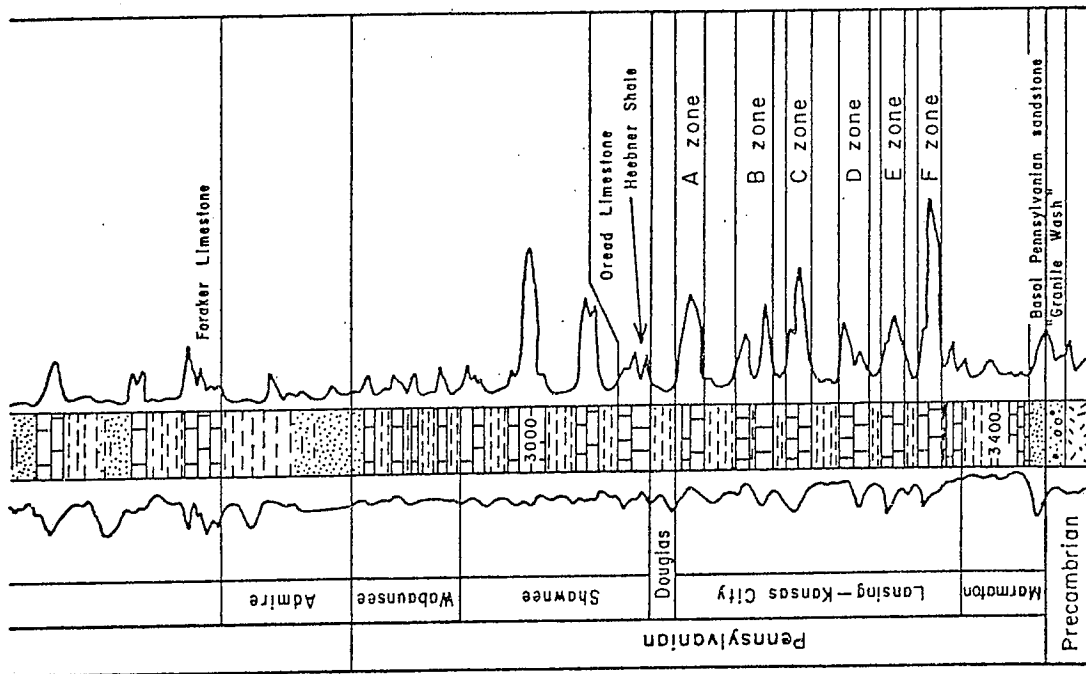
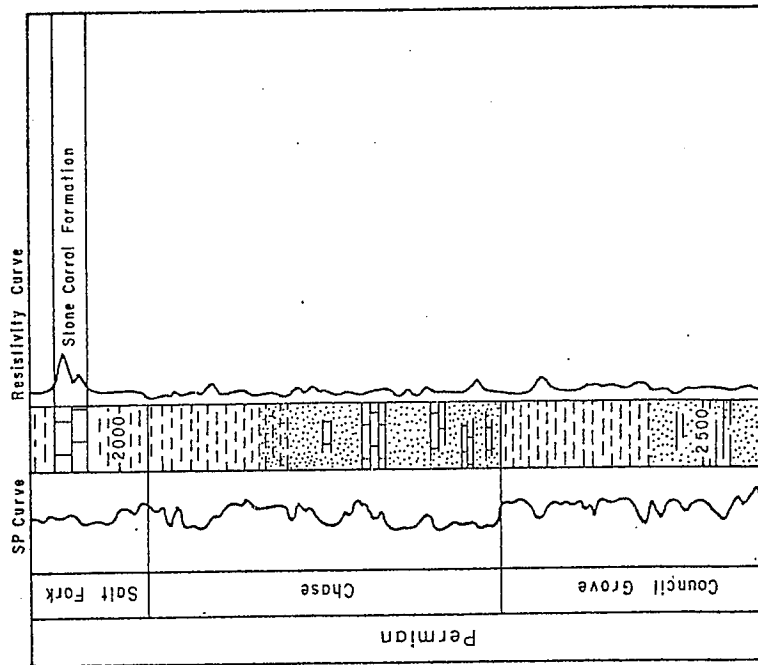


Figure 2. Electric log and columnar section of a typical well in study area (modified after Svoboda, 1962).

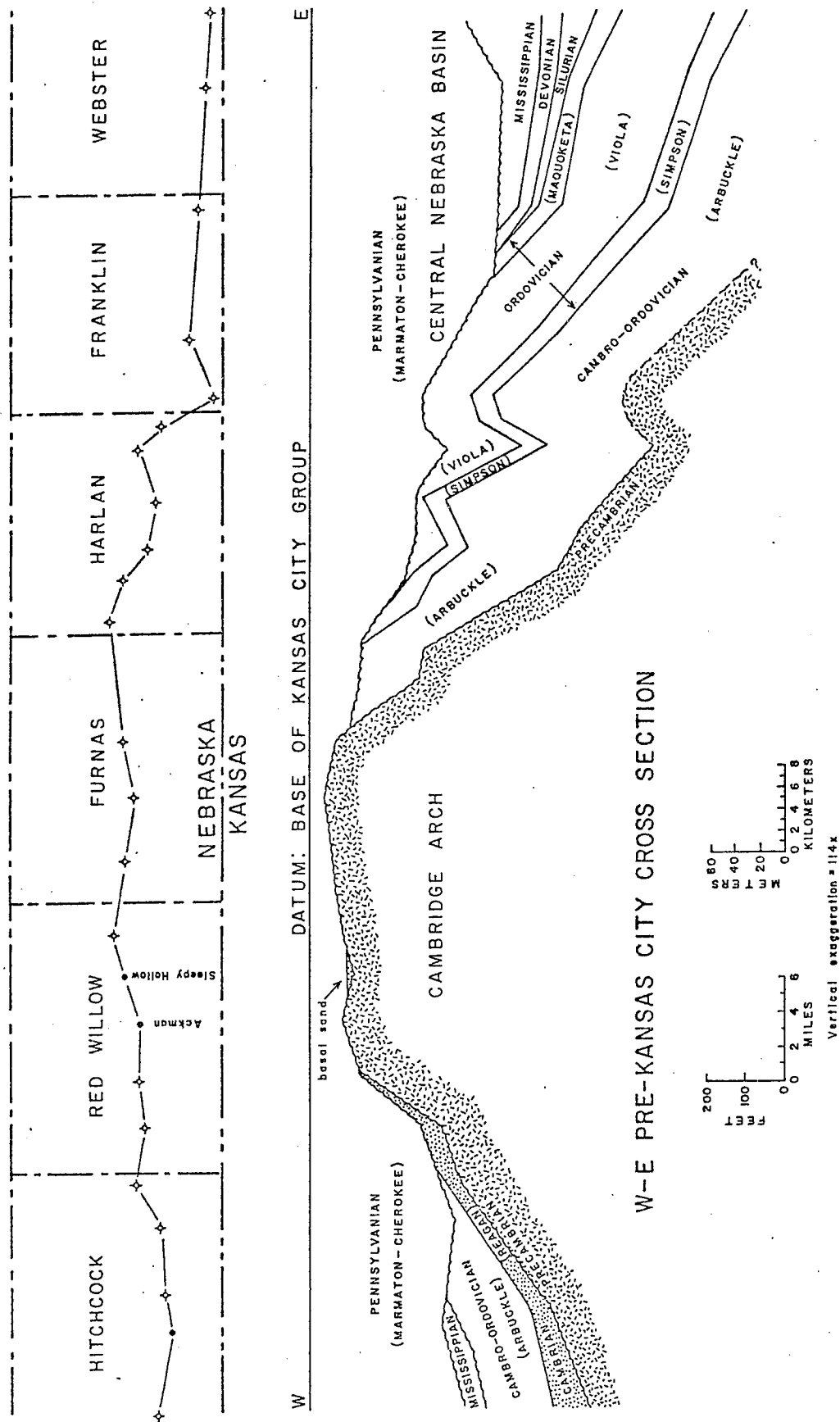


Figure 3. West-east regional cross section in southern Nebraska showing stratigraphic and structural relations at the beginning of Kansas City deposition (modified after Larson, 1962).

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

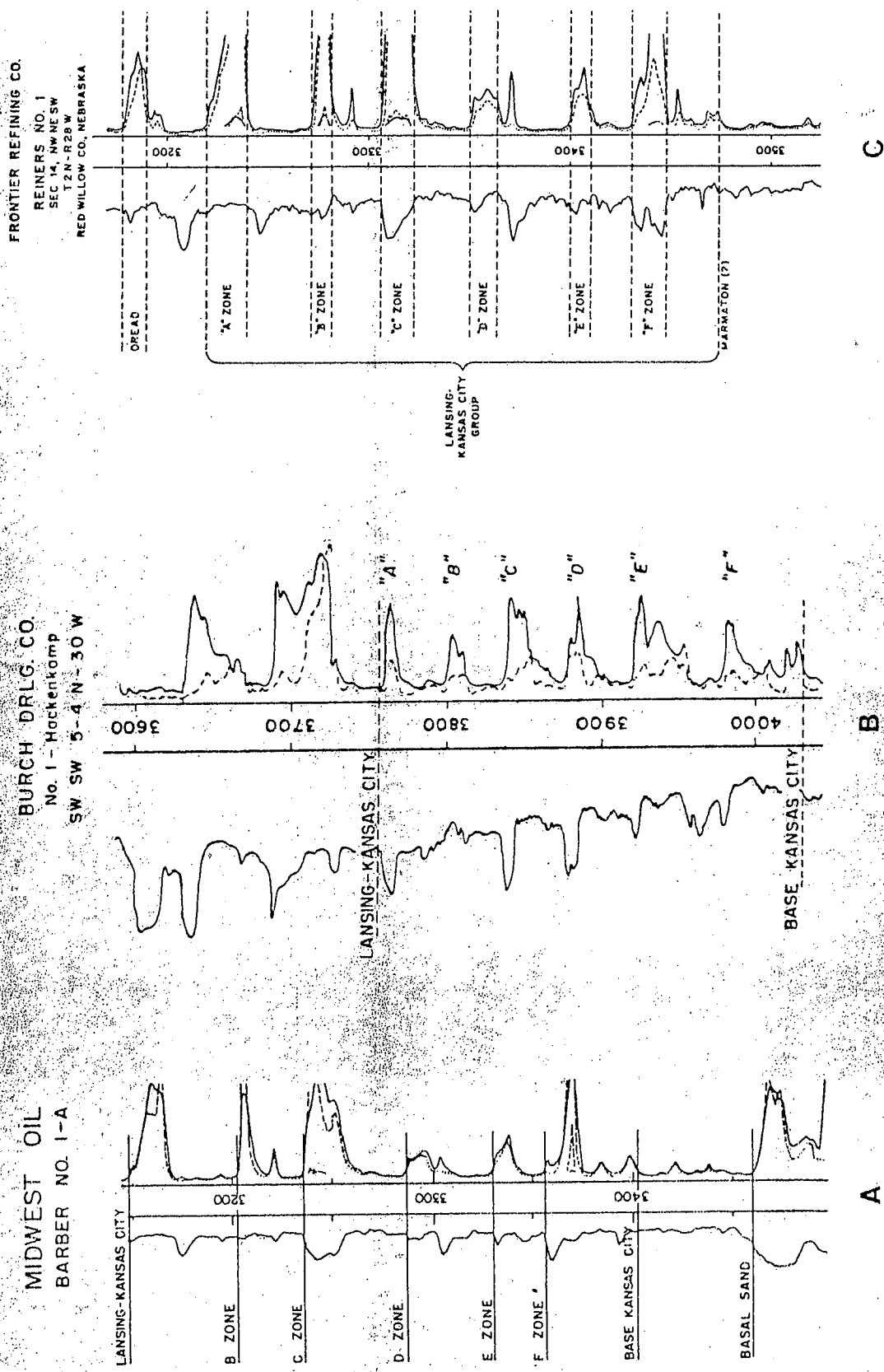


Figure 4. Various usages of the term "B zone." Modified after contributors to R.M.A.G. 1961:  
 A - Kincaid, B - Trimble, C - Larson.

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 overlies 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 a 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,  $<3^\circ$ ). 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.

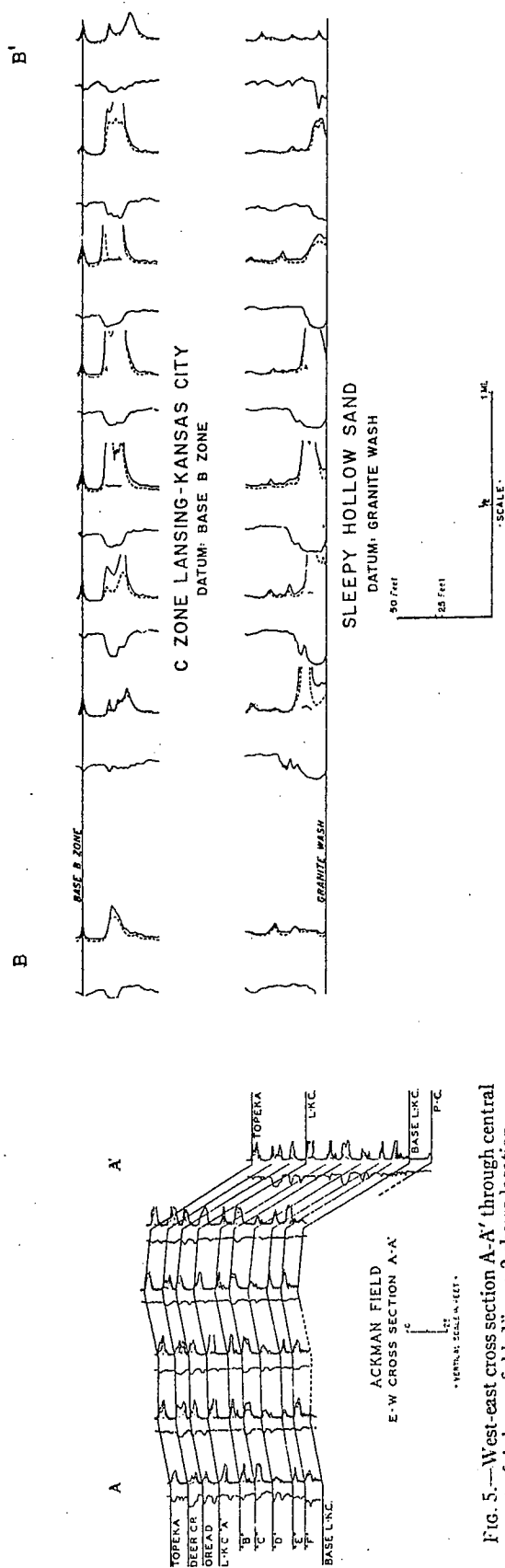


FIG. 5.—West-east cross section A-A' through central part of Ackman field. Figure 2 shows location.

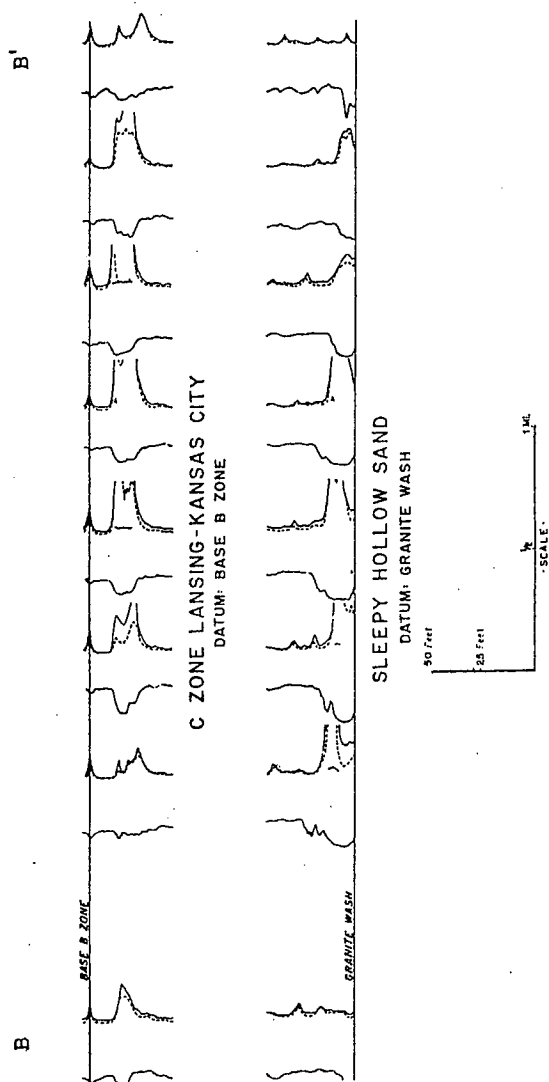


FIG. 12.—West-east cross section B-B' through central part of Sleepy Hollow field. Upper section shows C zone of Lansing-Kansas City and lower section illustrates build-up of Sleepy Hollow basal sand.

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.

# PRINCIPAL STRUCTURAL FEATURES OF NEBRASKA

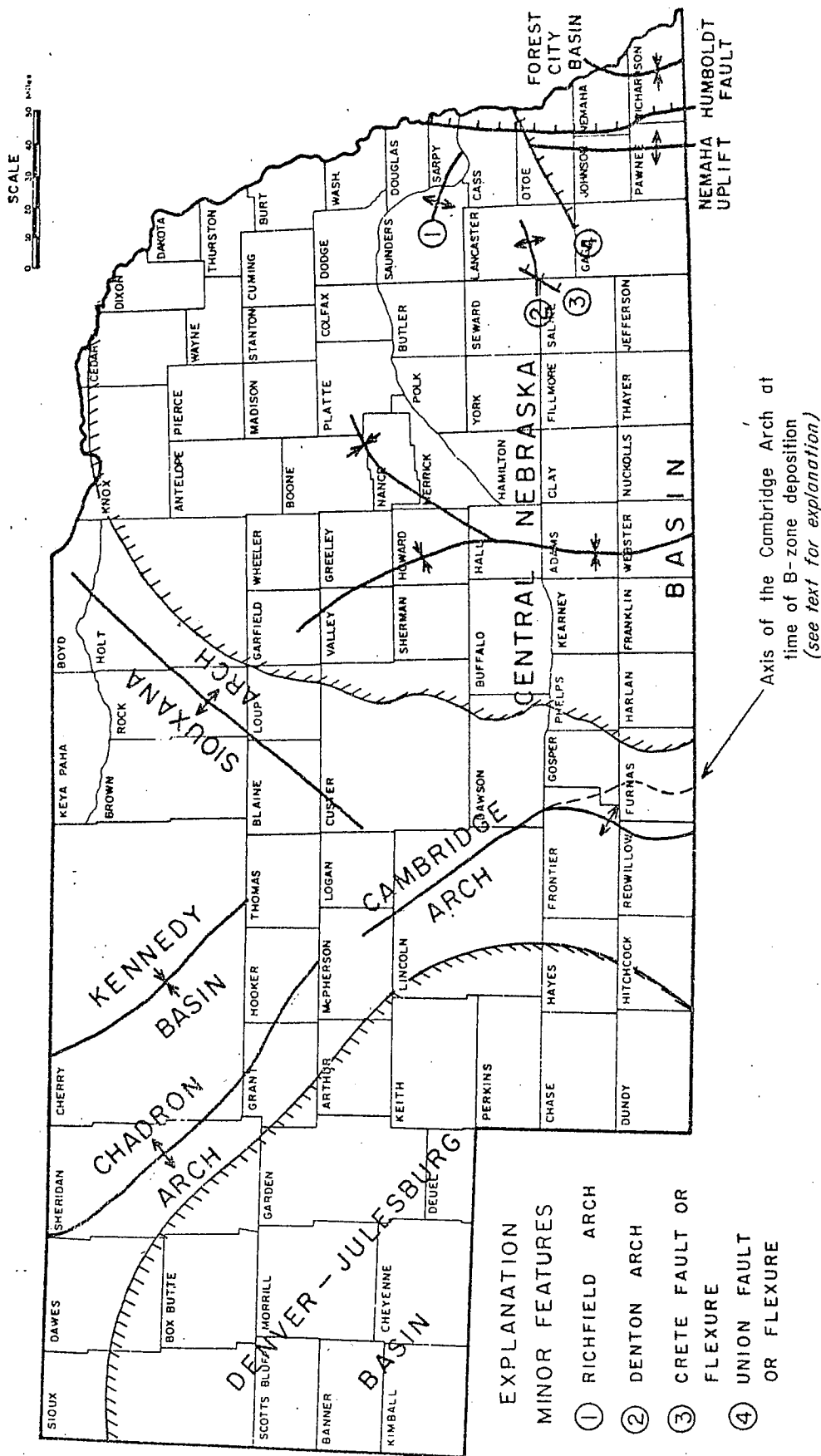


Figure 6. Modified after Carlson (1970). The east limit of the Denver - Julesburg Basin is from Martin (1965, p. 1913), the west limit of the Central Nebraska Basin from Reed (1954, p. 114).

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 override 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 ( $<1^\circ$ ). North of McCook, in the Bed Canyon field area, an abrupt change in dip to 700 feet per mile ( $7\frac{1}{2}^\circ$ ) 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-

## CAMBRIDGE ARCH IN KANSAS

|                            |                           |                                                             |
|----------------------------|---------------------------|-------------------------------------------------------------|
| QUATERNARY                 | Erosion                   | Post-Ogallala, tilting to east                              |
|                            |                           | Differential northwest tilting                              |
| TERTIARY - Top "Algal ls." | Erosion                   | Orogenic folding at end of Cretaceous                       |
| PLIOCENE Ogallala fm.      |                           |                                                             |
| UPPER CRETACEOUS           | Pierre shale              |                                                             |
|                            | Niobrara formation        | Some slight structural movement                             |
|                            | Fort Hays ls.             |                                                             |
|                            | Carlile shale             | Differential structural movement                            |
|                            | Greenhorn limestone       |                                                             |
|                            | Graneros shale            |                                                             |
|                            | Dakota formation          | Northwest tilt?                                             |
| LOWER CRETACEOUS           |                           | Tilting southward?                                          |
|                            |                           | Slight tilting to northwest                                 |
| JURASSIC Morrison fm.      | Erosion                   | Structural movement possibly at end of Permian              |
|                            | Top chert                 |                                                             |
| PERMIAN                    | Stone Carbonate formation |                                                             |
|                            |                           |                                                             |
|                            |                           | Minor structures possibly formed by differential compaction |
| PENNSYLVANIAN              |                           |                                                             |
|                            |                           |                                                             |
|                            | Top Lansing               | No movement                                                 |
|                            | Base Kansas City          | Pre-Kansas City, some differential movement                 |
| MISSISSIPPIAN              |                           | Post-Mississippian, major structural movement               |
|                            |                           | Slight structural movement?                                 |
|                            | "Kinderhook" shale        | Pre-"Kinderhook," structural movement                       |
| ORDOVICIAN                 | Viola limestone           | Pre-Viola, slight structural movement                       |
|                            | Simpson group             | Structural movement Pre-Simpson?                            |
| PRE-CAMBRIAN               | Arbuckle group            |                                                             |
|                            | Campanian - Reagan ss.    |                                                             |
|                            | Erosion                   |                                                             |

Not to scale

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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- 1) Structure--base of Greenhorn (Cret.)
  - 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) Isopach distribution of pre-Penn.
  - 8) Structure top Precambrian.
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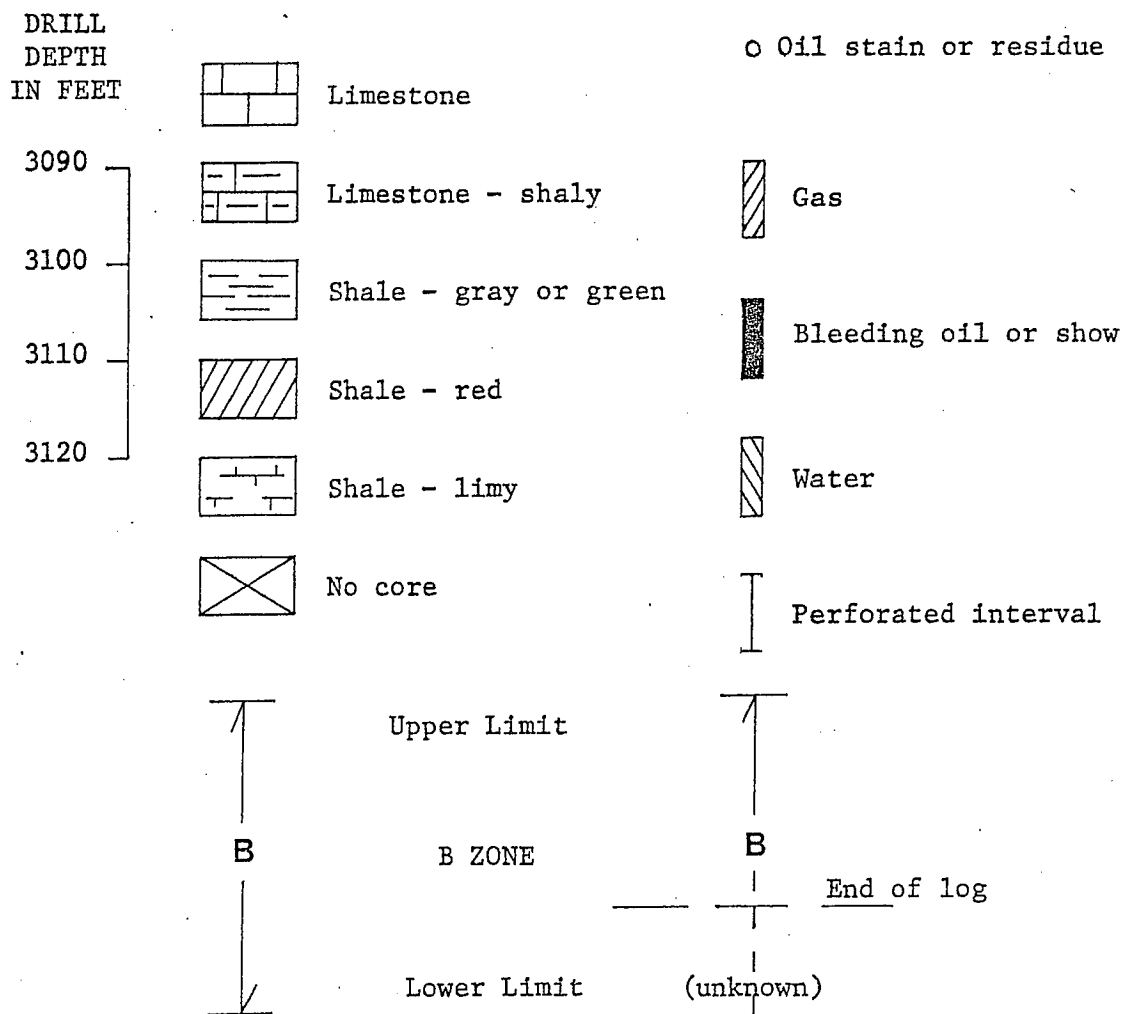
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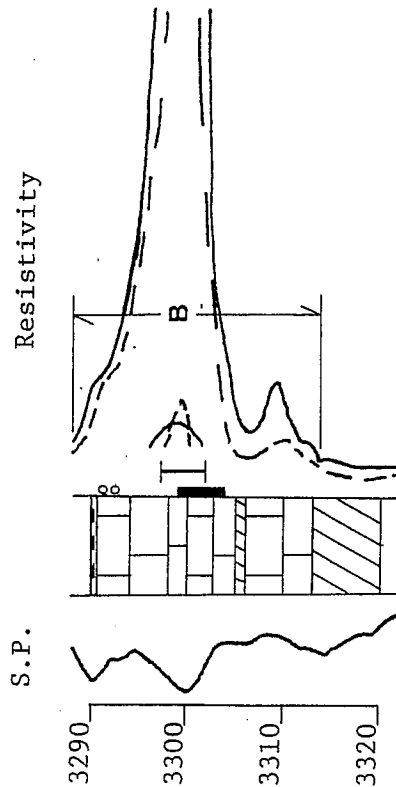
## APPENDIX A

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

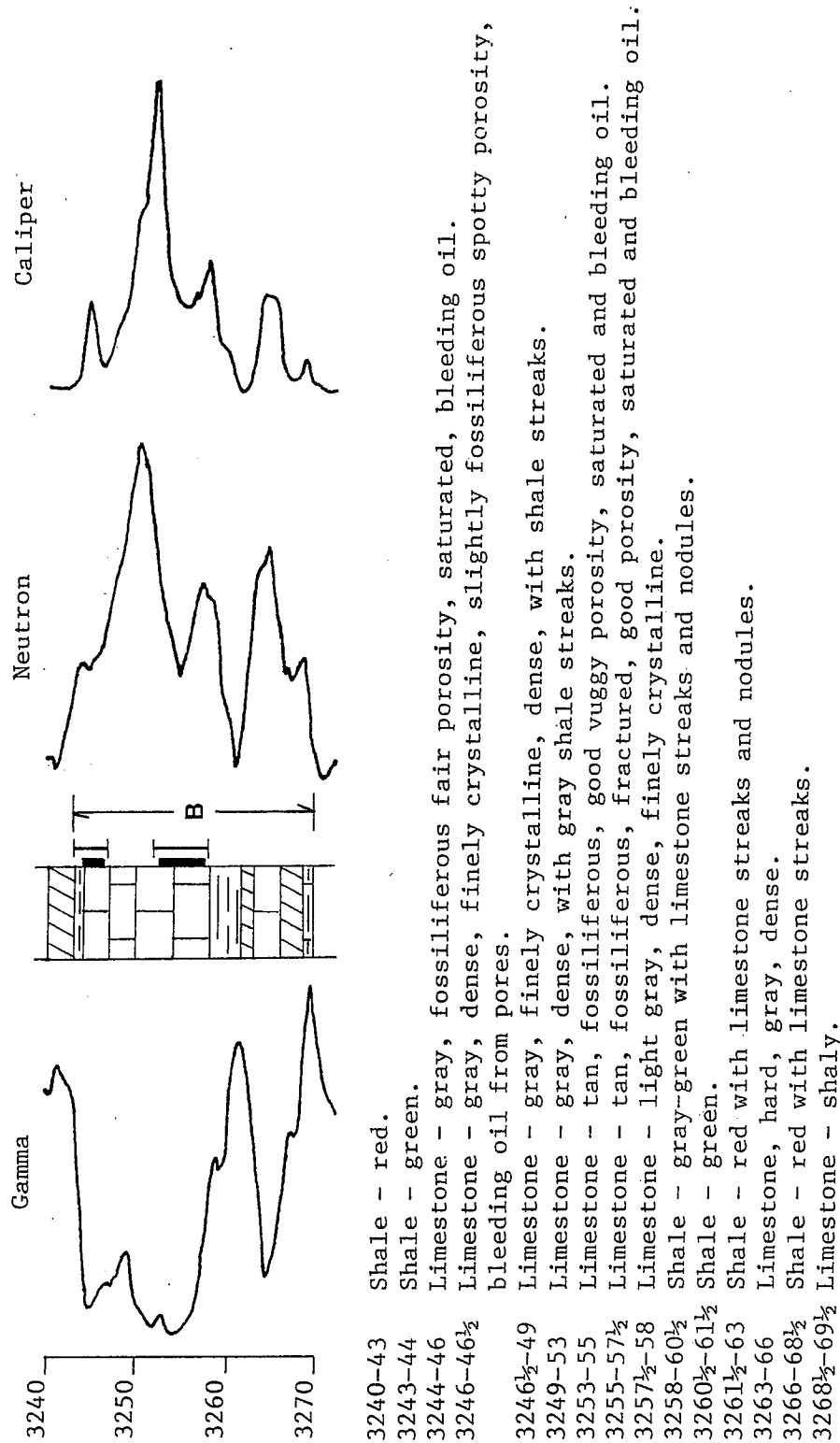


COLEMAN No. 1 KIRCHER, NENW, 3-1N-27W, el. 2578' (K.B.)\*

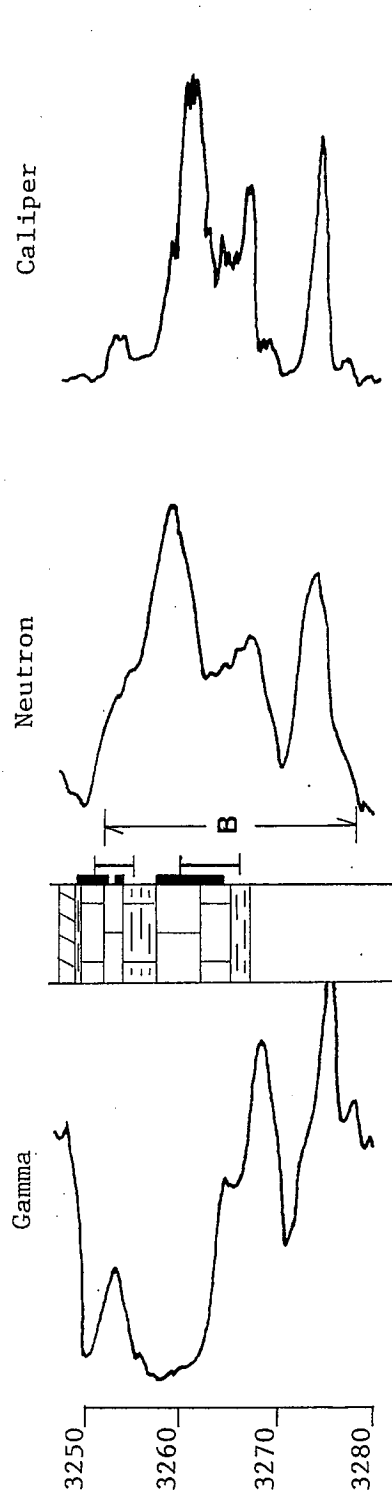


|          |                                                                                                                                          |
|----------|------------------------------------------------------------------------------------------------------------------------------------------|
| 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 (5Y 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.)

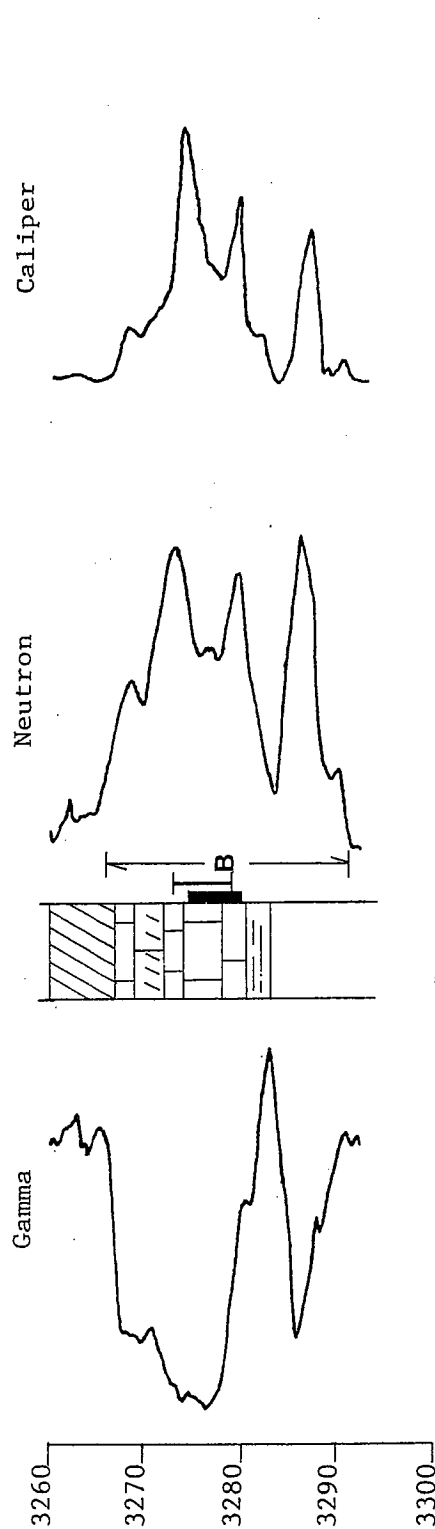


EMPIRE No. 2 KIRCHER, C-SWNE, 4-1N-27W, el. 2539' (K.B.)\*



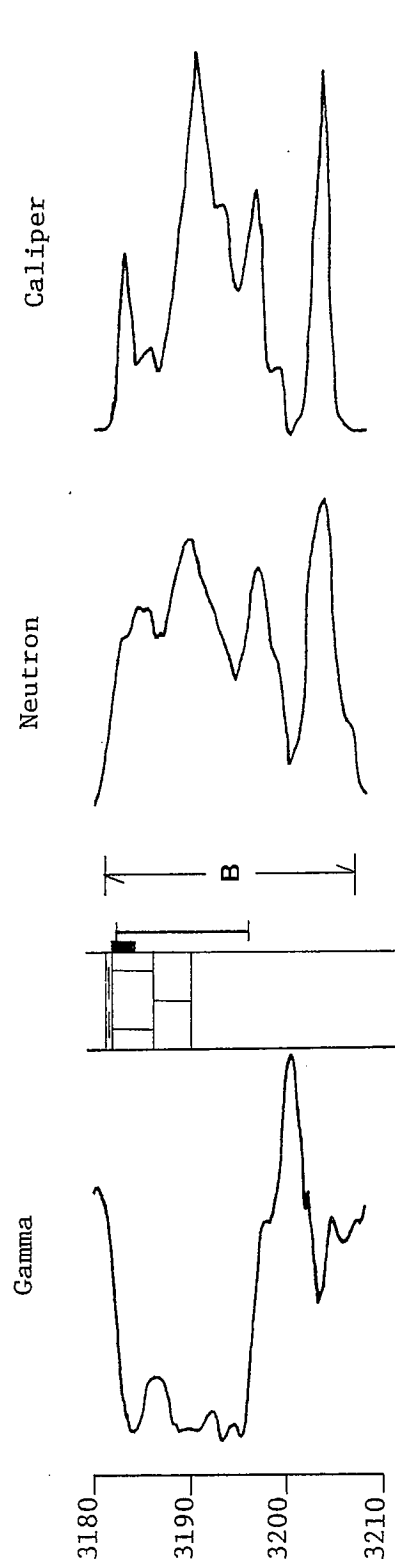
- 3247-49 Shale - red.
- 3249-49½ Shale - green.
- 3249½-52 Limestone - tan, finely crystalline with green shale nodules, streaks of porosity saturated and bleeding oil.
- 3252-53 Limestone - tan, finely crystalline with green shale streaks, no show.
- 3253-54 Limestone - tan, finely crystalline, fossiliferous 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.)\*



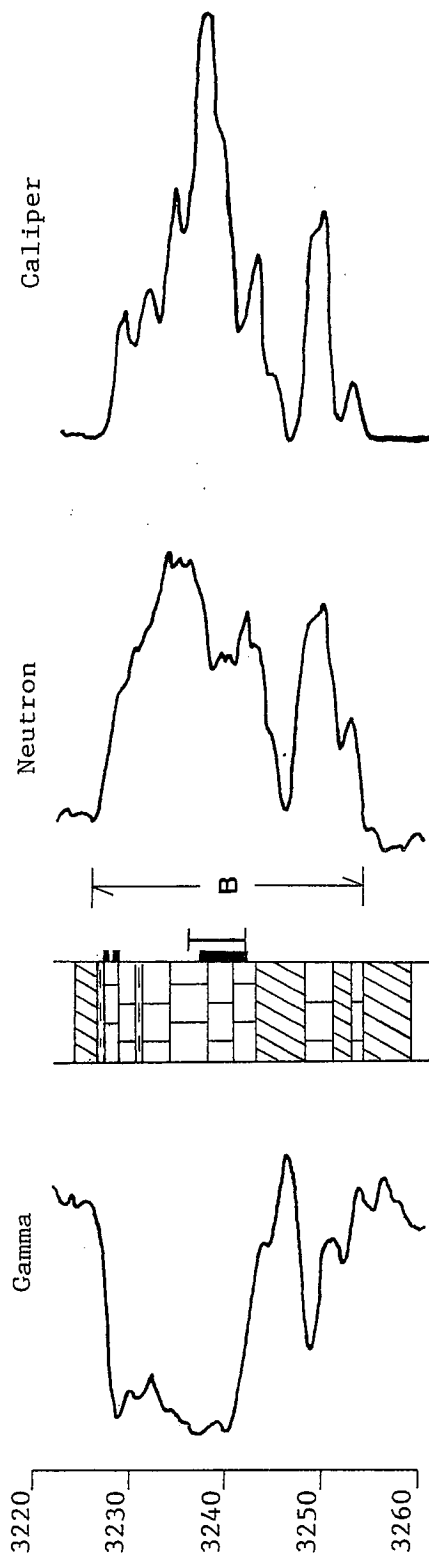
- 3260-67 Shale - red with four inches of green shale at bottom.
- 3267-69 Limestone - tan, finely crystalline, slightly fractured with green shale partings.
- 3269-72 Limestone with red shale.
- 3272-74½ Limestone - gray, dense, finely crystalline with green shale partings.
- 3274½-80 Limestone - tan, 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.)\*



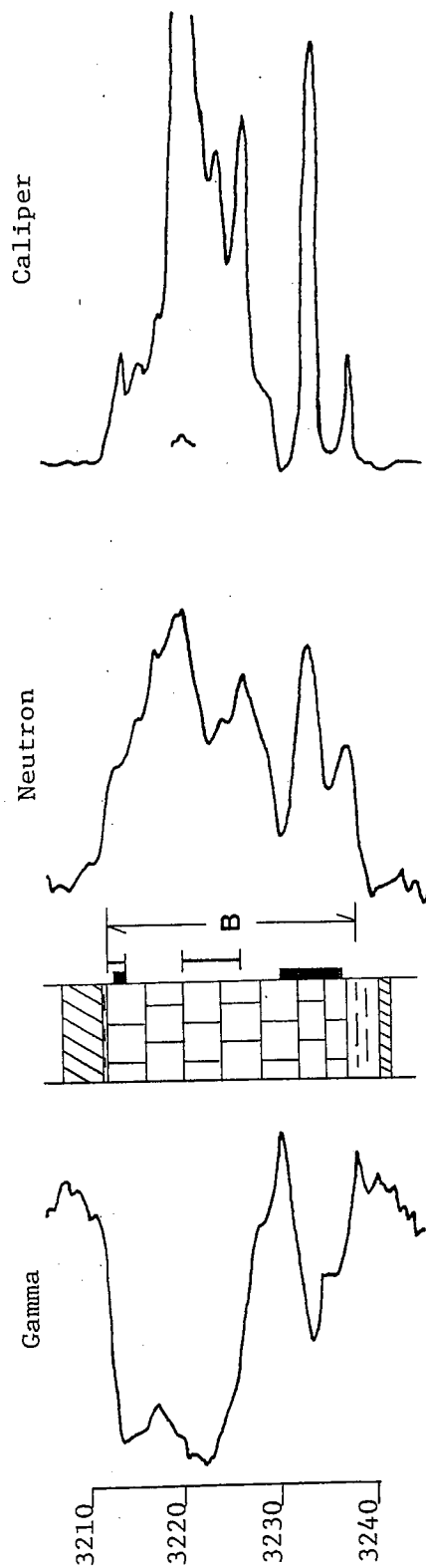
3181-81½ Shale - green.  
 3181½-84 Limestone - porous, fossiliferous, saturated and bleeding oil.  
 3184-89 Limestone - gray-green, dense, finely crystalline with numerous green shale partings.  
 3189-90 Limestone - hard, gray, finely crystalline with thin shale partings.

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



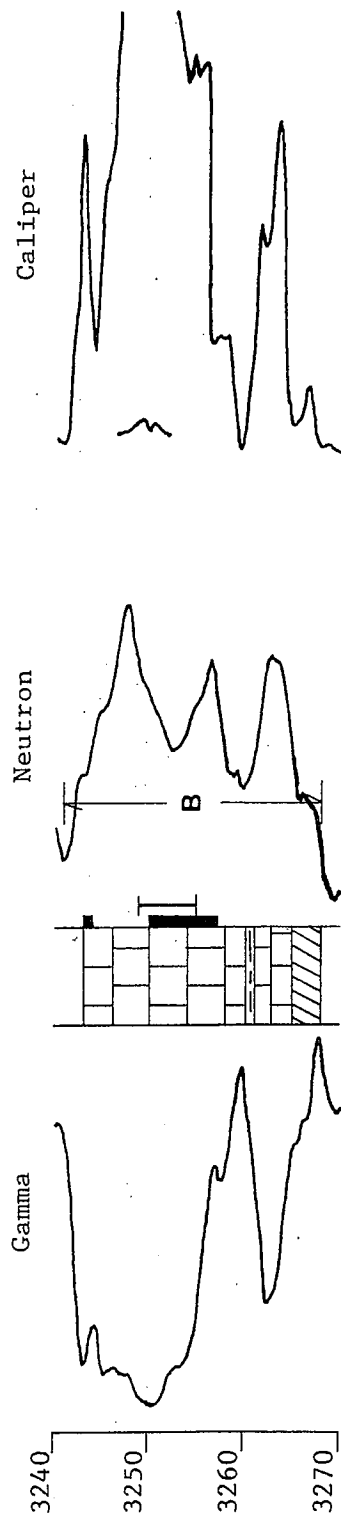
- 3224-26½ Shale - red.
- 3226½-27 Shale - green.
- 3227-27½ Limestone - gray, finely crystalline, slightly fossiliferous, spotty saturation, bleeding oil.
- 3227½-28 Limestone - gray, finely crystalline, dense, with green shale streaks.
- 3228-28½ Limestone - gray, finely crystalline, few vugs, saturated 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.)



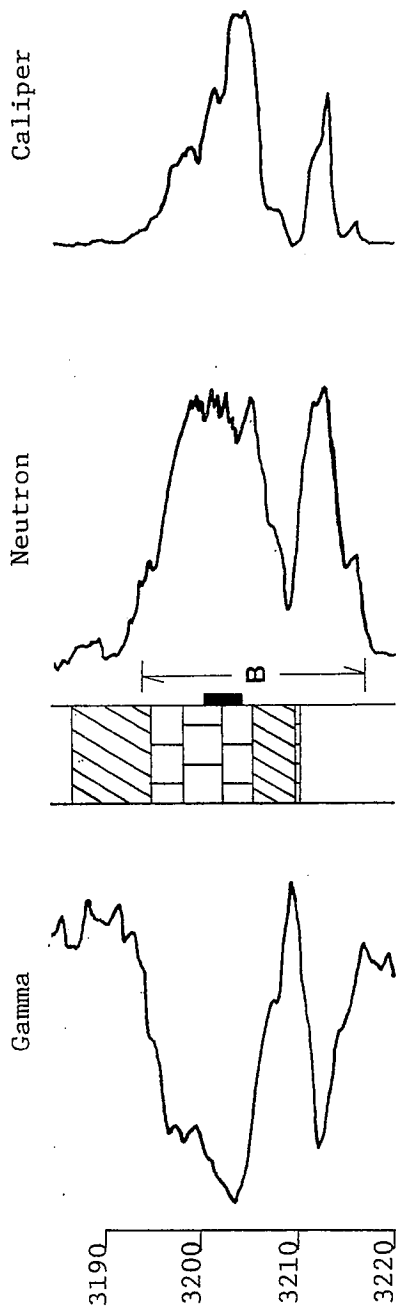
- 3207-11½ Shale - red.
- 3211½-12 Shale - green.
- 3212-13 Limestone - gray, very finely crystalline, dense, with few green shale streaks.
- 3213-14 Limestone - tan, fossiliferous, granular, good saturation, bleeding oil.
- 3214-15 Limestone - gray, finely crystalline, shaly.
- 3215-16 Limestone - gray, 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-IN-27W, el. 2542' (K.B.)



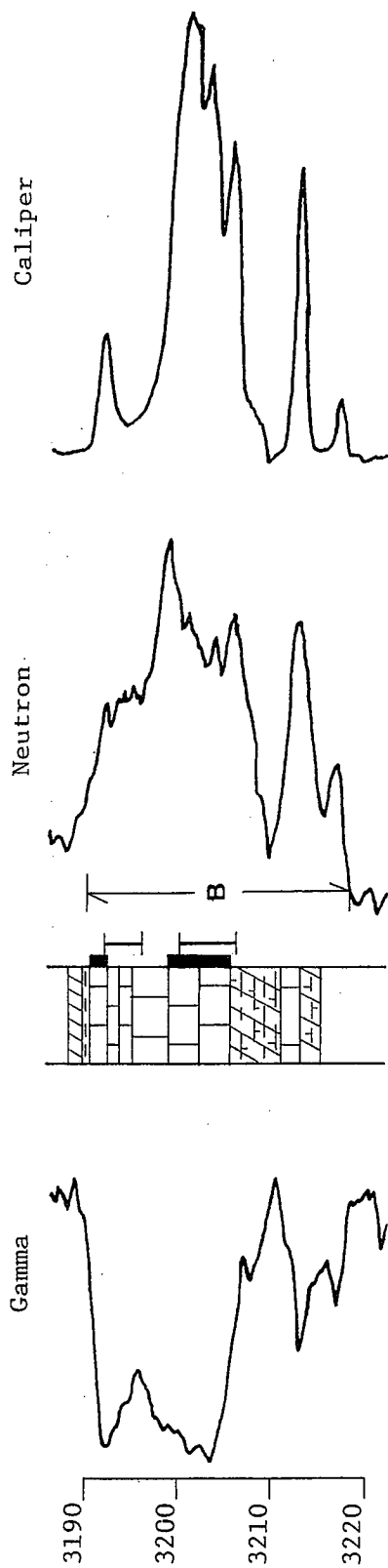
- 3243-44 Limestone - tan, granular and finely crystalline, poor porosity, fair saturation, bleeding in spots.
- 3244-47½ Limestone - gray, very finely crystalline, dense, streaked with shale.
- 3247½-50 Limestone - gray, very finely crystalline, dense, with few thin shale partings.
- 3250-52 Limestone - 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.)



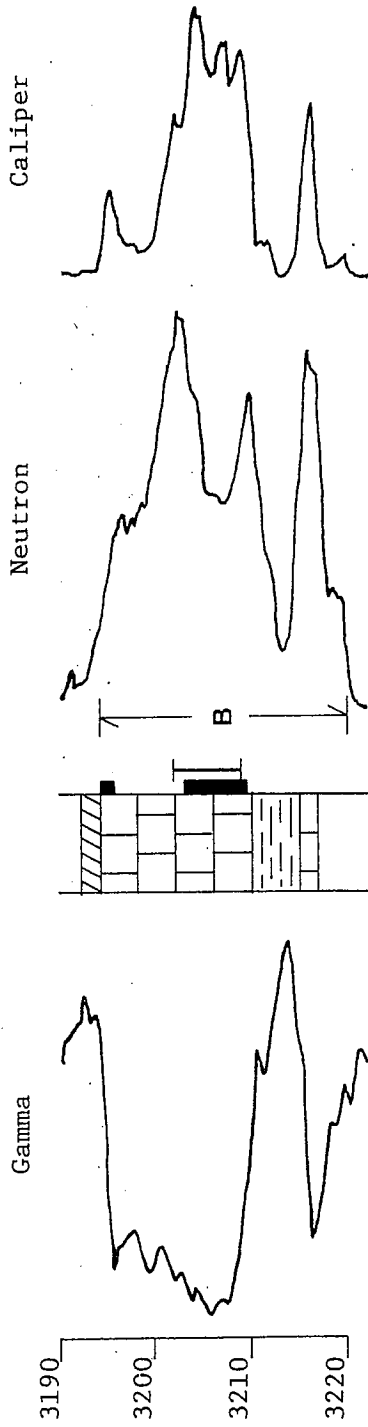
- 3186-94½ Shale - red, 4 inches of green shale at base.
- 3194½-3201½ Limestone - gray, very finely crystalline, broken and filled with red and green shale.
- 3201½-04 Limestone - tan, finely crystalline, partly fossiliferous, with shale nodules, streaks of porosity, saturated and bleeding oil.
- 3204-05 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.)



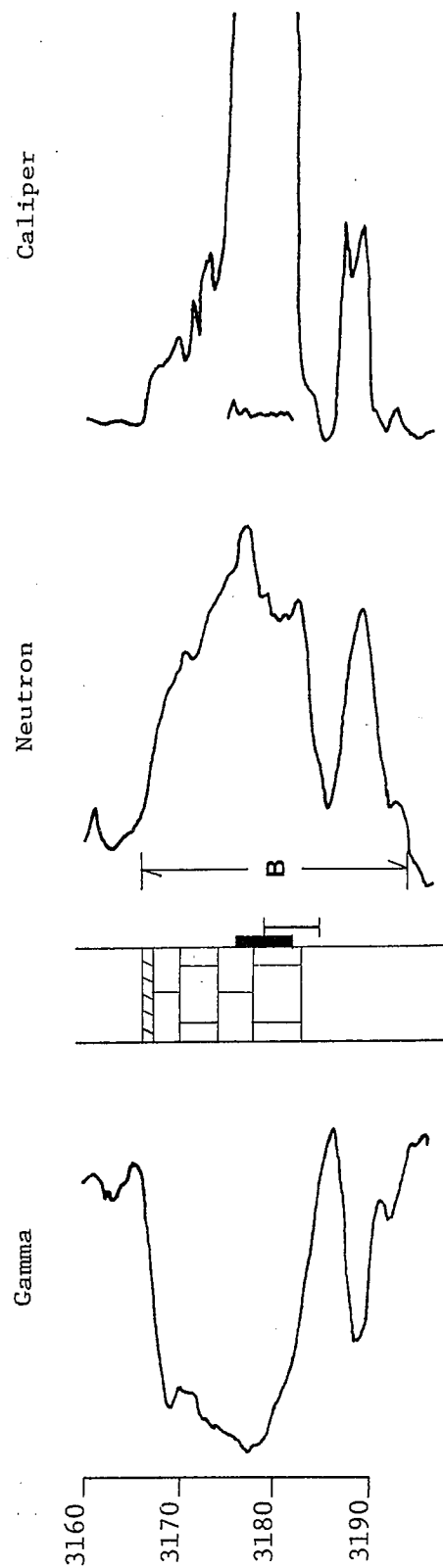
- 3188-89½ Shale - red, with six inches of green shale.
- 3189½-90½ Limestone - gray, dense, with shale streaks.
- 3190½-92½ Limestone - gray, finely crystalline, spotty porosity, saturated and bleeding oil.
- 3192½-93½ Limestone - gray, shaly.
- 3193½-95 Limestone - gray, dense, fossiliferous, few vugs, 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.)



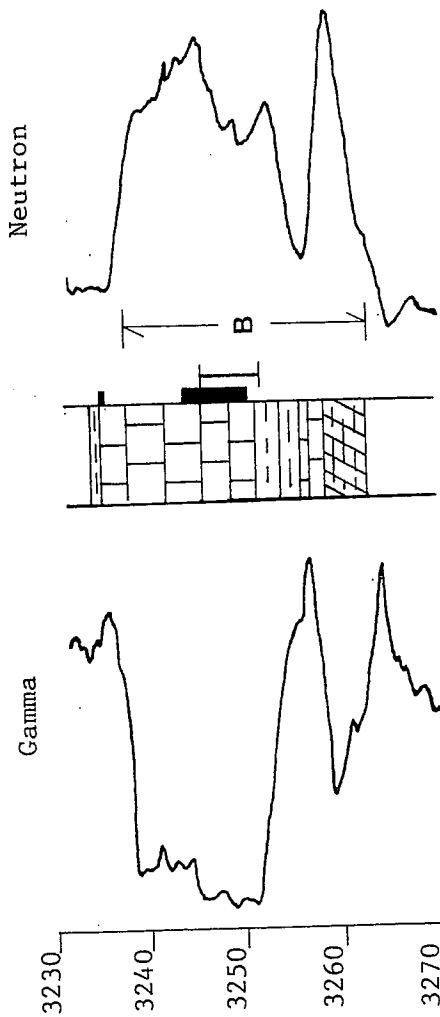
- 3192-94 Shale - red, with three inches of green shale.
- 3194-95½ Limestone - tan, finely crystalline, fair porosity, saturated and bleeding oil.
- 3195½-98 Limestone - tan, finely crystalline, dense, with thin streaks of shale.
- 3198-99 Limestone - tan, finely crystalline, slight porosity in bottom 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-IN-27W, el. 2464' (K.B.)



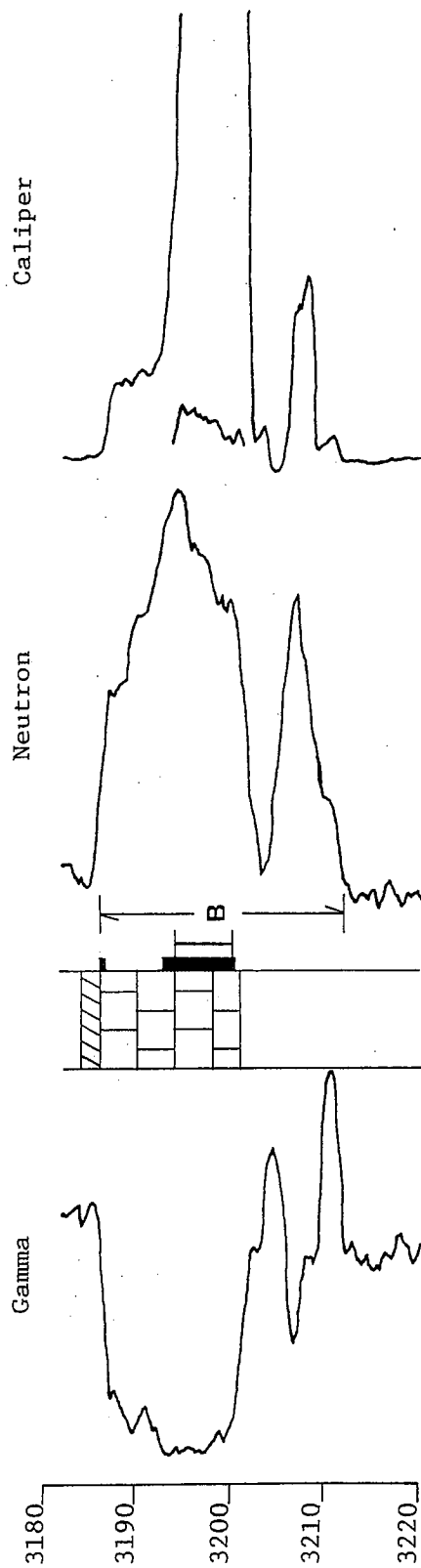
- 3166-67 Shale - red with three inches of green shale.
- 3167-72 Limestone - gray to tan, finely crystalline, numerous thin shaly streaks.
- 3172-73 Limestone - gray, finely crystalline, dense with thick shale streaks.
- 3173-76 Limestone - gray, finely crystalline, dense with numerous thin shale partings.
- 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

3186-86½

3186½-89

3189-90

3190-93

3193-95

3195-3200½

3200½-01

Shale - red with four inches of green shale at bottom.

Limestone - gray, fossiliferous, poor porosity, spotty saturation, bleeding oil.

Limestone - gray, fossiliferous, finely crystalline, with numerous shale streaks, no show.

Limestone - gray, finely crystalline, very dense.

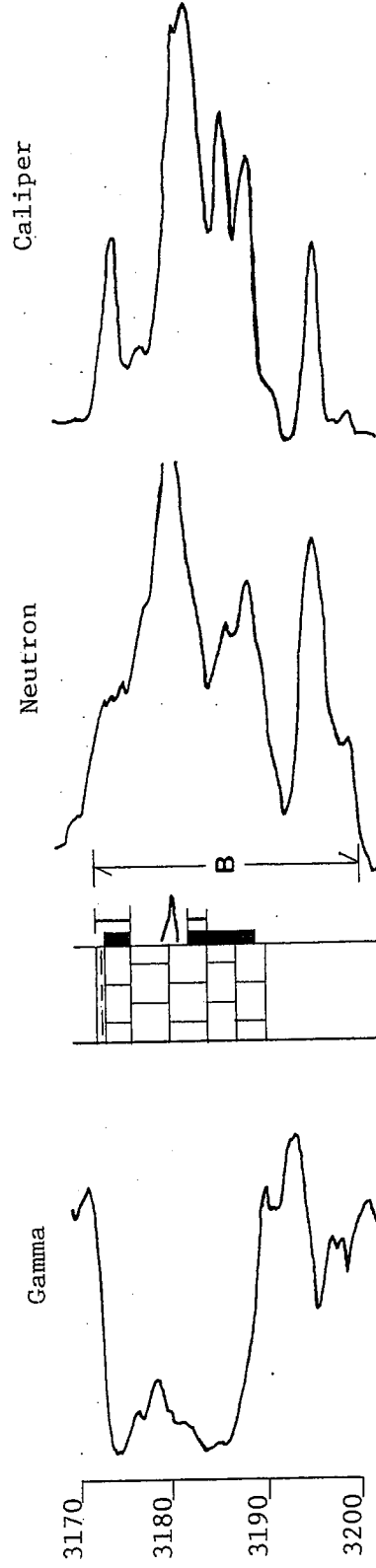
Limestone - gray, finely crystalline, very shaly.

Limestone - gray, finely crystalline, partly fossiliferous, streaks of porosity, saturated and bleeding oil.

Limestone - tan, fossiliferous, poor to fair vuggy porosity, saturated and bleeding oil.

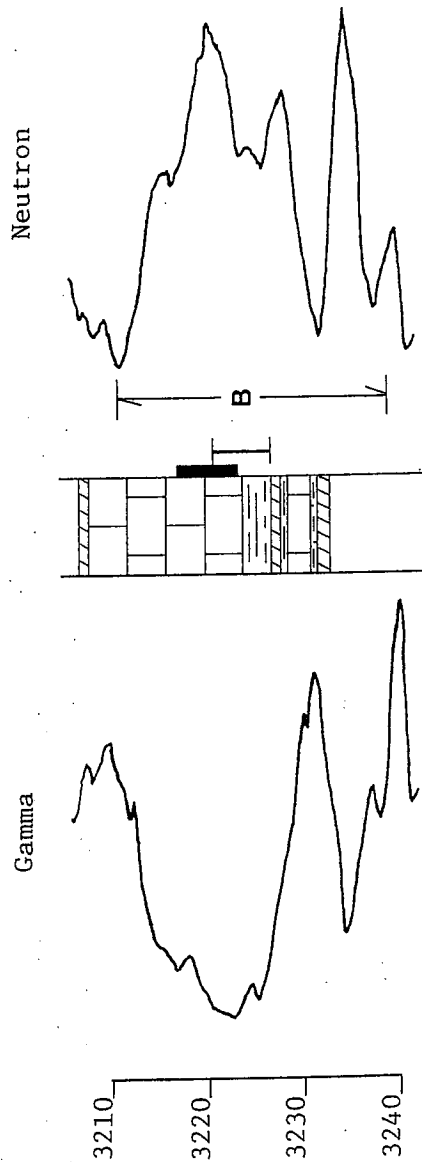
Limestone - gray-green, shaly, no show.

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



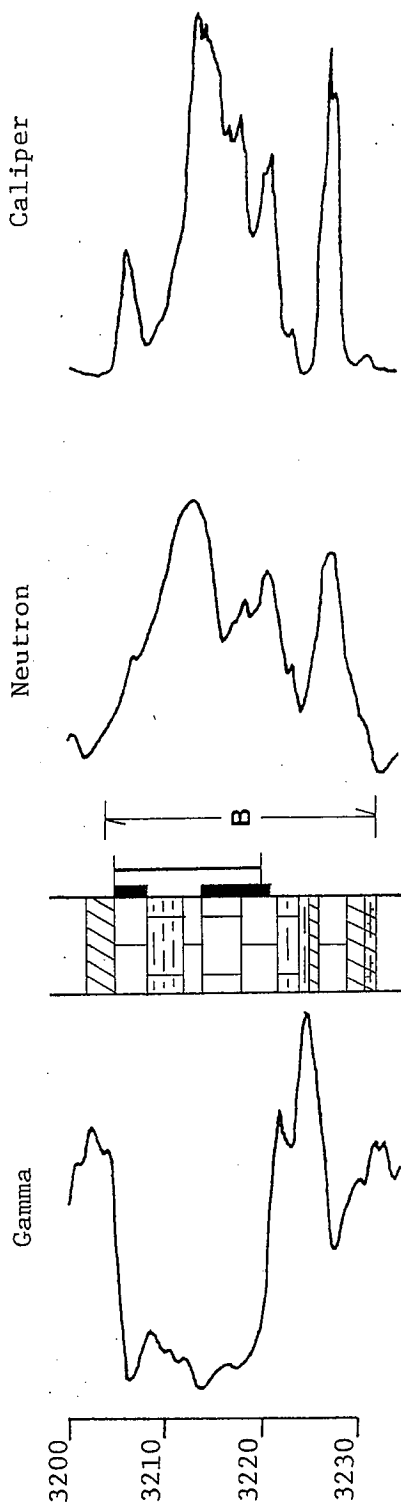
- 3172-73 Shale - green, with limestone nodules.
- 3173-76 Limestone - tan, finely crystalline, fossiliferous, partly fractured, saturated and bleeding oil.
- 3176-79 Limestone - gray, dense, finely crystalline, with green shale partings.
- 3179-82 Limestone - gray, dense, finely crystalline, with green 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.)



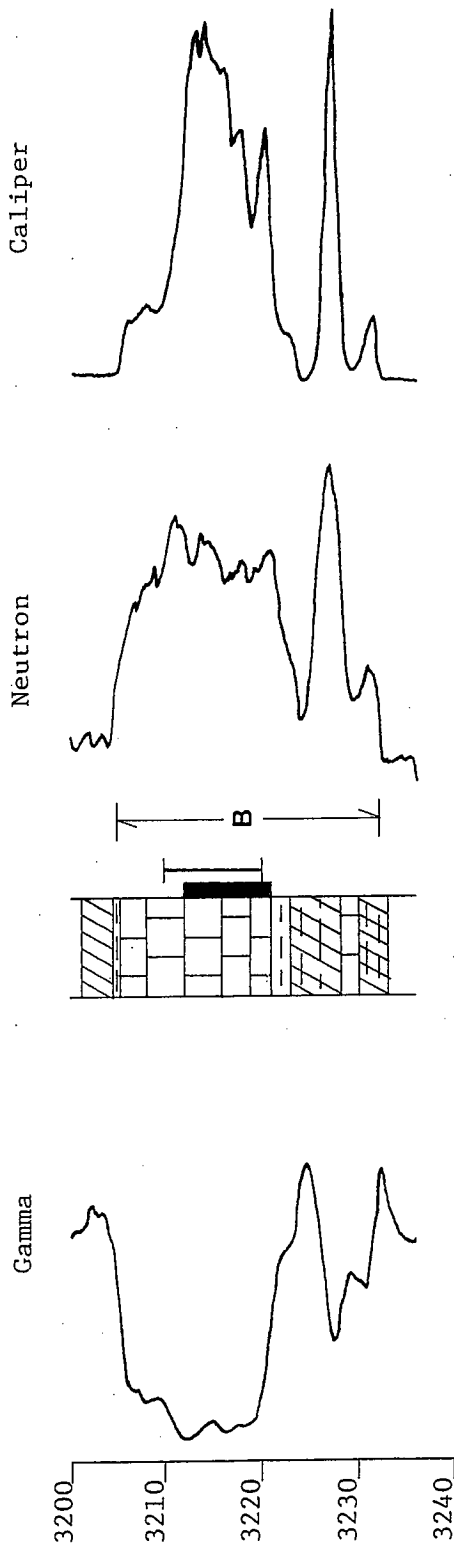
- 3207-08 Shale - red with three inches of green shale at base.
- 3208-13½ Limestone - gray, dense, finely crystalline with red shale streaks and partings.
- 3213½-17 Limestone - gray, finely crystalline, dense with green shale streaks.
- 3217-23½ Limestone - tan, fossiliferous, poor to fair porosity, 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.)



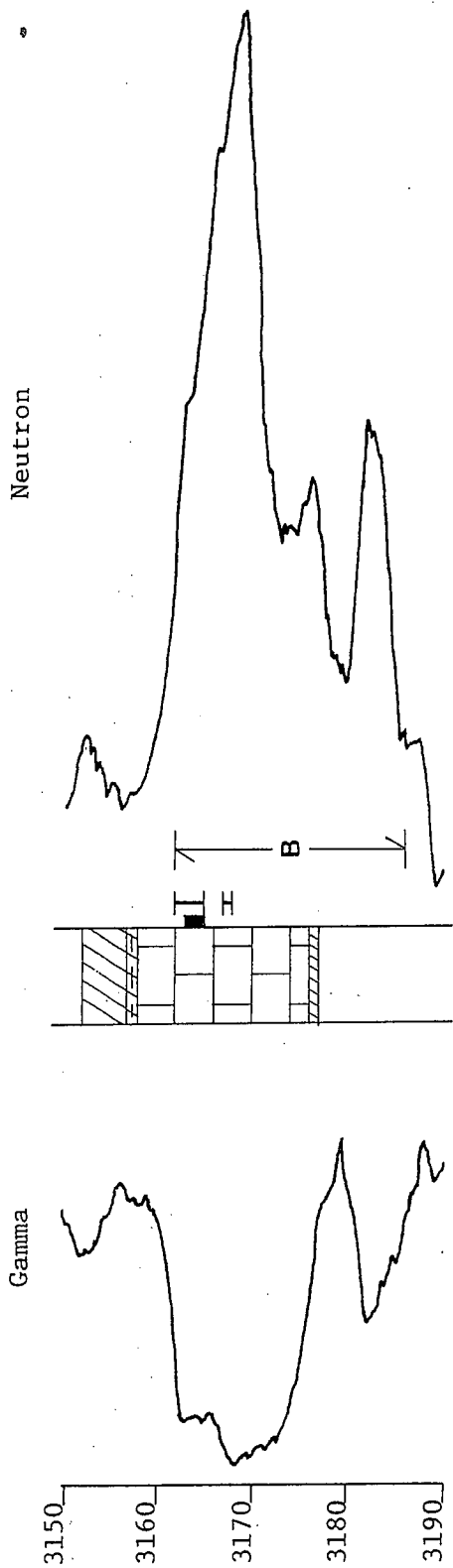
- 3202-05 Shale - red with six inches of green shale on bottom.  
 3205-07½ Limestone - granular, very fossiliferous, good porosity, saturated and bleeding oil.  
 3207-08½ Limestone - gray, finely crystalline, fossiliferous, spotted porosity and saturation, some green shale in vugs and streaks.  
 3208½-12 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.

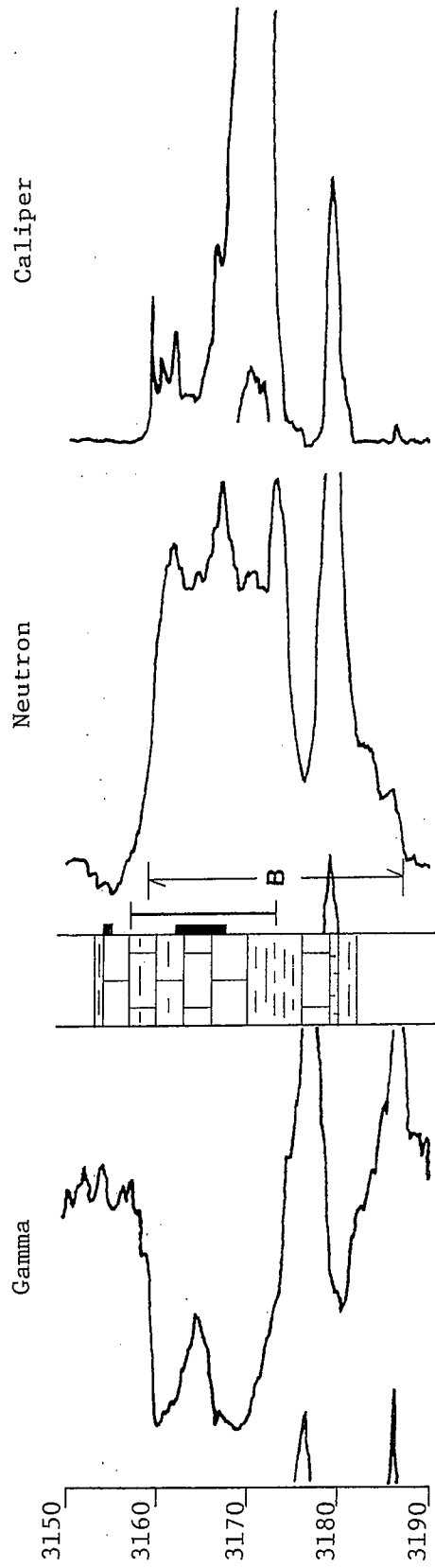
MURFIN No. B-2 MESSNER, C-SESW, 10-1N-27W, el. 2436' (K.B.)



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.

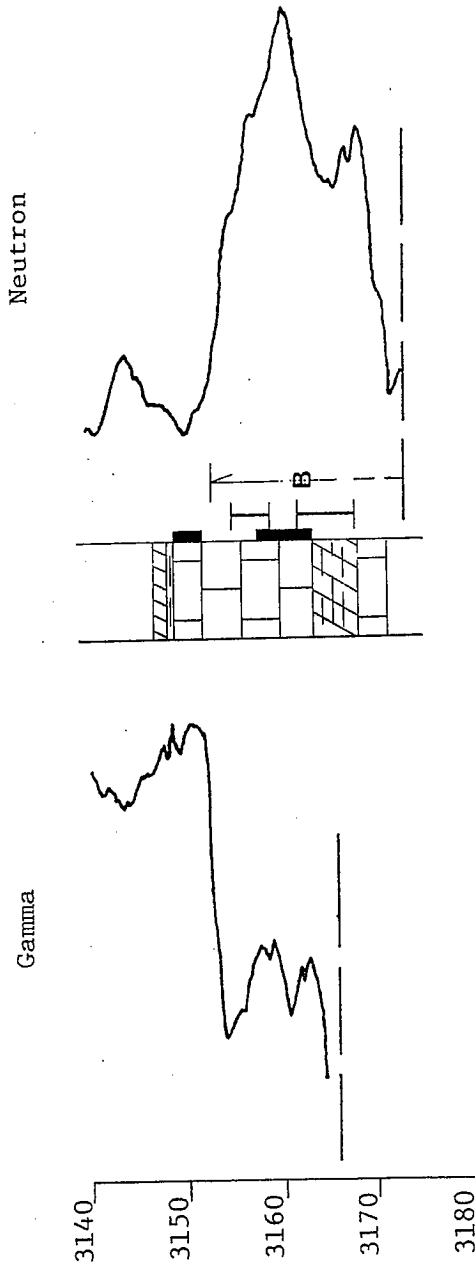
3162-63 Same with gray shale.  
 3163-64 Same with porous streaks bleeding oil.  
 3164-65 Same with five feet of good porous bleeding oil.  
 3165-66 Limestone - gray, dense.  
 3166-72 Same with fossils.  
 3172-76 Limestone - gray, dense.  
 3176-77 Shale - red.

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



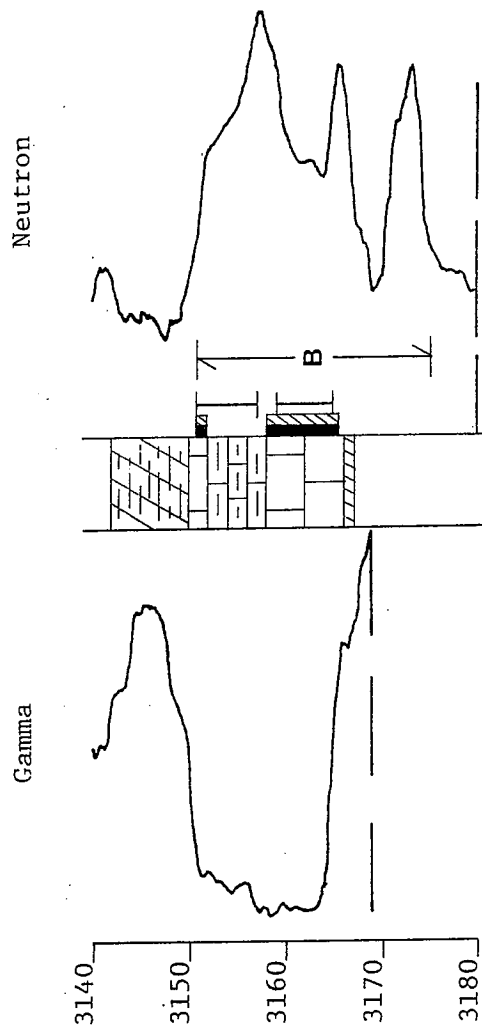
- 3153-54 Shale
- 3154-55 Limestone - white, gray, finely crystalline, bleeding oil.
- 3155-57 Limestone - white, gray, finely crystalline, no show.
- 3157-62 Limestone - very shaly.
- 3162-63 Limestone - slightly shaly with trace of bleeding oil.
- 3163-67½ Limestone - white, crystalline, slightly fossiliferous 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.)



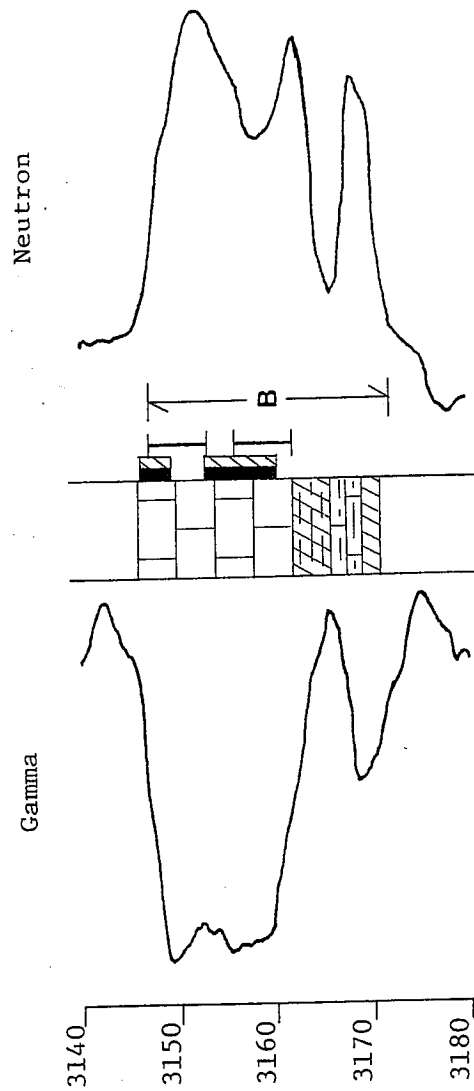
3147-48½ Shale - red.  
 3148½-49 Shale - green.  
 3149-52 Limestone - tan, granular, medium crystalline, fair porosity, saturated and bleeding oil.  
 3152-57½ Limestone - gray, finely crystalline, dense, with red and green shale streaks.  
 3157½-63 Limestone - tan, fossiliferous, fair to good porosity, 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-SEW, 14-1N-27W, el. 2420' (K.B.)



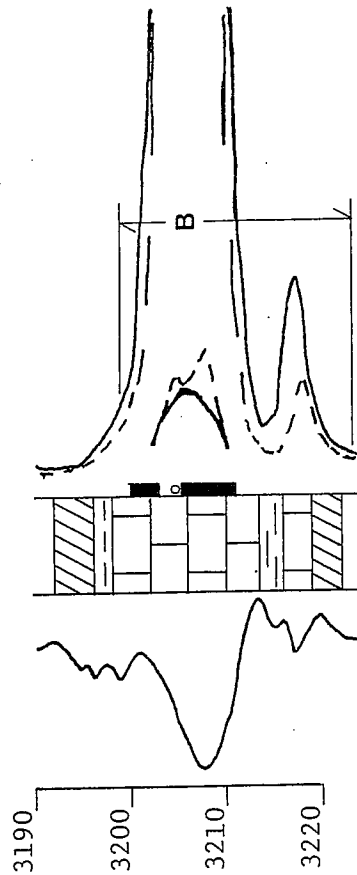
- 3146-46½ Limestone - finely crystalline, dense.
- 3146½-49½ Limestone - finely crystalline, fossiliferous, good vuggy and fair fractured porosity, bleeding oil and gas.
- 3149½-53 Limestone - finely crystalline, fossiliferous, dense, few shale partings.
- 3153-60½ Limestone - medium crystalline, fossiliferous, fair vuggy and fractured 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.              |

Resistivity

S.P.



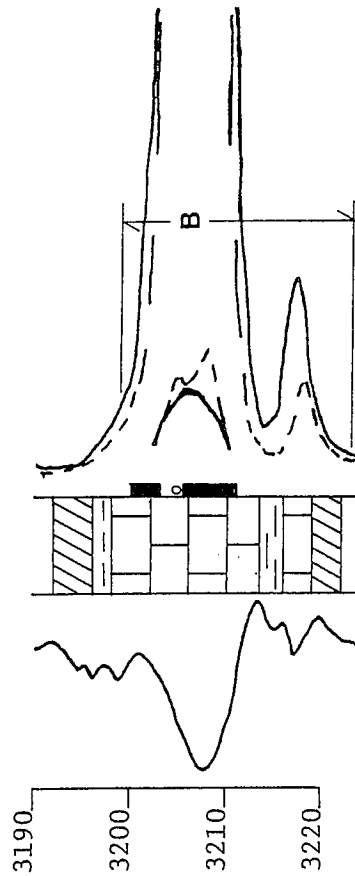
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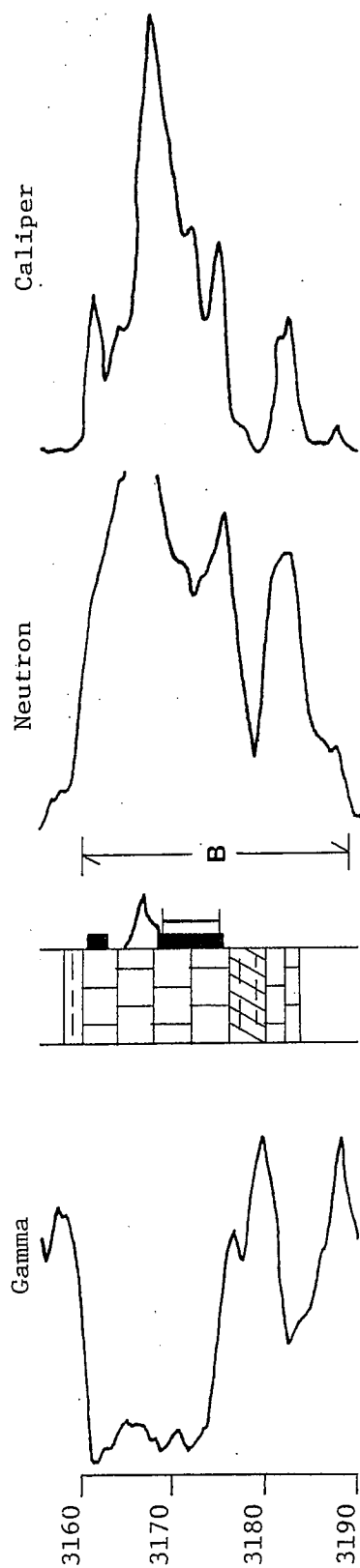
- 3210-11 Limestone - light gray, dense, bleeding oil in hairline fractures, some fractures filled with calcite.
- 3211-13½ Limestone - gray, crystalline, tight, no show, interbedded with gray-green, hard, dense, limy, pyritic shale.
- 3213½-15 Shale - olive green, silky, fissile.
- 3215-16 Shale - gray-green, hard, dense, limy, silky, abundant ostracods and fusulinids.
- 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.

Resistivity

S.P.

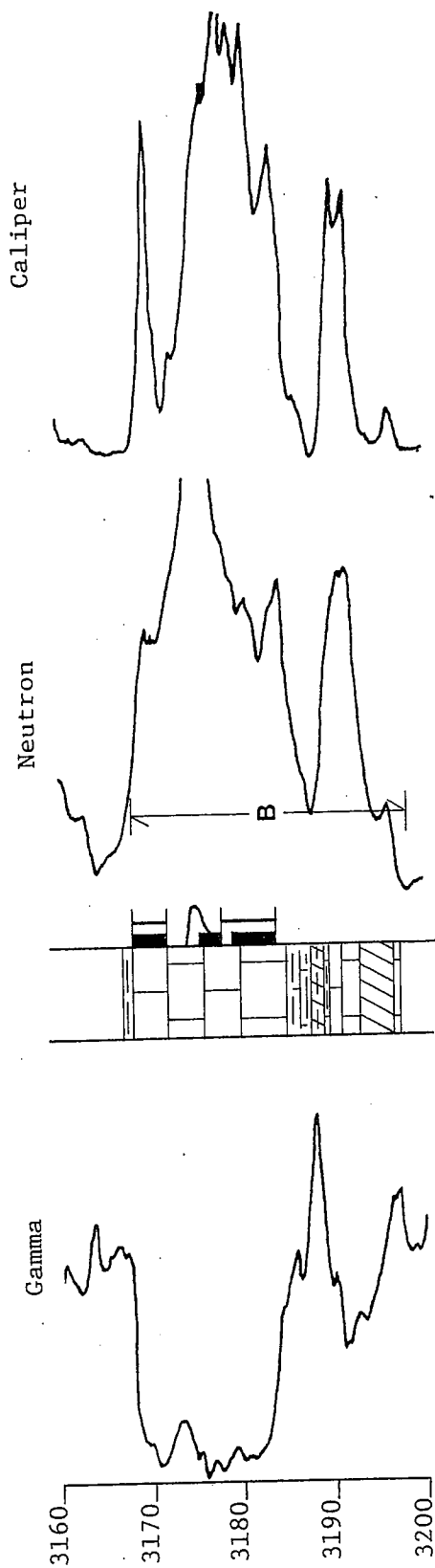


EMPIRE No. 1 NICHOLSON, C-SWNE, 15-1N-27W, el. 2432' (K.B.)



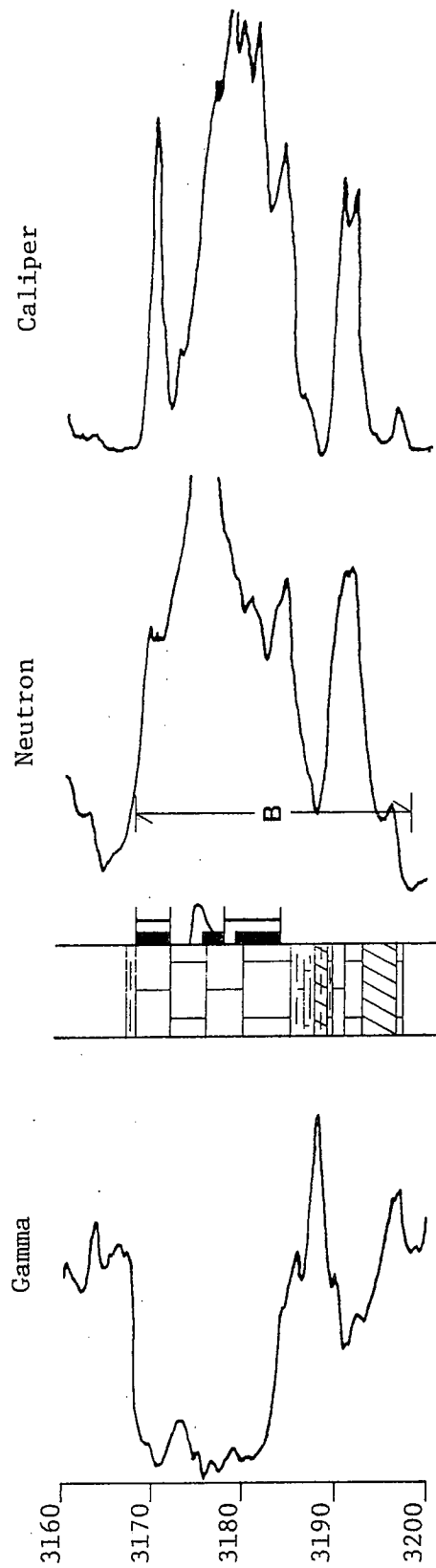
- 3158-58 3/4 Shale - red.
- 3158 3/4-60 Shale - green.
- 3160-60 1/2 Limestone - gray, dense, granular.
- 3160 1/2-63 Limestone - gray, granular, fair porosity, saturated and bleeding oil.
- 3163-67 Limestone - light tan, very finely crystalline, with numerous green shale partings.
- 3167-68 Limestone - light gray, very finely crystalline, dense.
- 3168-75 1/2 Limestone - tan, finely crystalline, partly fossiliferous, fair porosity, saturated and bleeding oil.
- 3175 1/2-76 Limestone - cream, very finely crystalline, dense.
- 3176-80 Shale - gray-green and red, with limestone streaks and nodules.
- 3180-83 1/2 Limestone - tan, dense, finely crystalline.

EMPIRE No. 3 NICHOLSON, C-SENW, 14-IN-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.

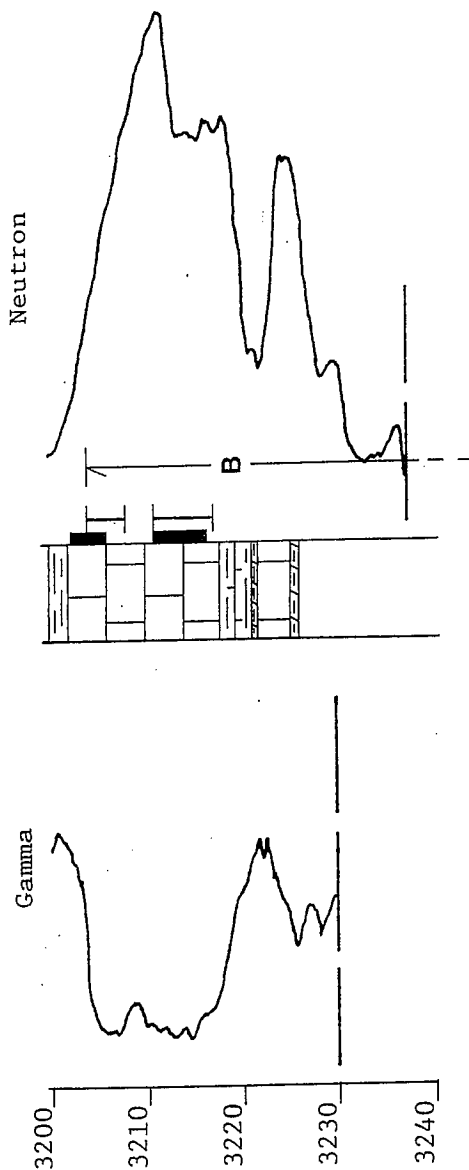
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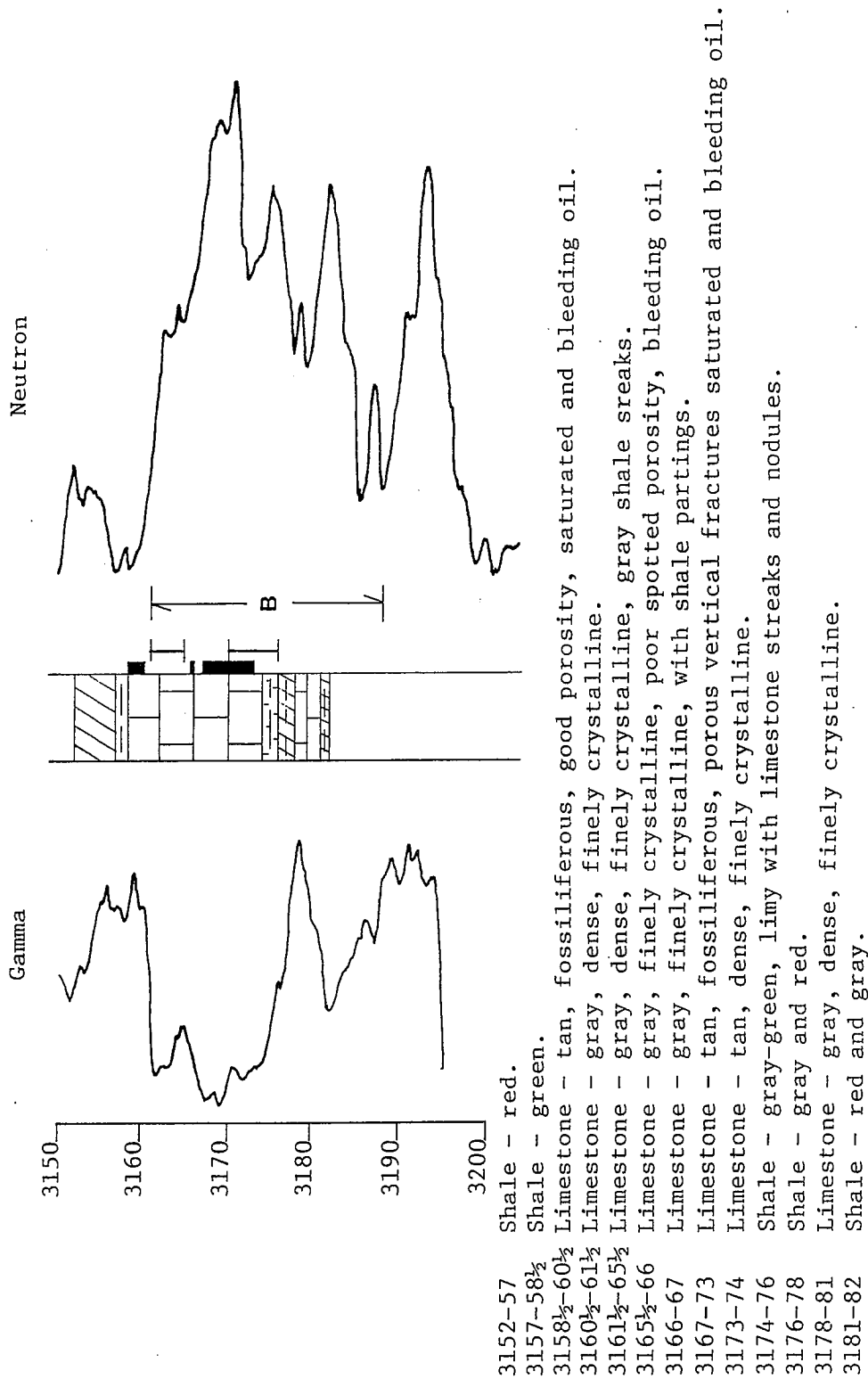
- 3185-87½ Shale - gray-green, limy, fossils and limestone nodules, major vertical fractures from 3184½ to 3187.
- 3187½-89 Shale - red and green.
- 3189-89½ Limestone - green, shaly.
- 3189½-92 Limestone - light tan, very finely crystalline, dense.
- 3192-93 Limestone - gray, shaly.
- 3193-96½ Shale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

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

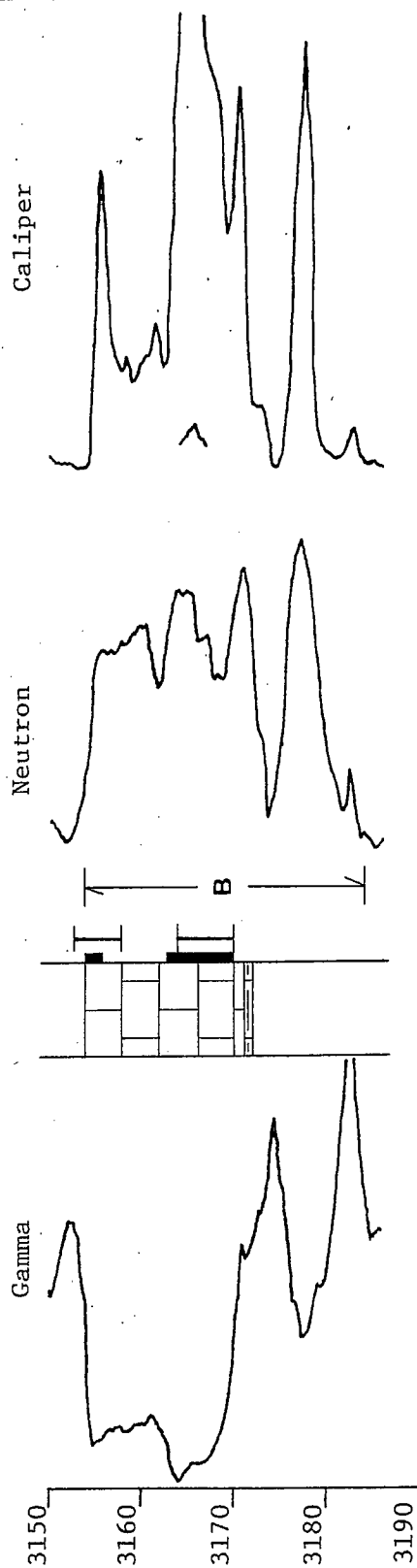


- 3200-02 Shale - green.
- 3202-02½ Limestone - tan, finely crystalline, dense.
- 3202½-04½ Limestone - tan, finely crystalline, fossiliferous, fair porosity, saturated and bleeding oil.
- 3204½-06 Limestone - gray, finely crystalline, fossiliferous, dense, few streaks of porosity, bleeding oil in spots.
- 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-IN-27W, el. 2433' (K.B.)



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.

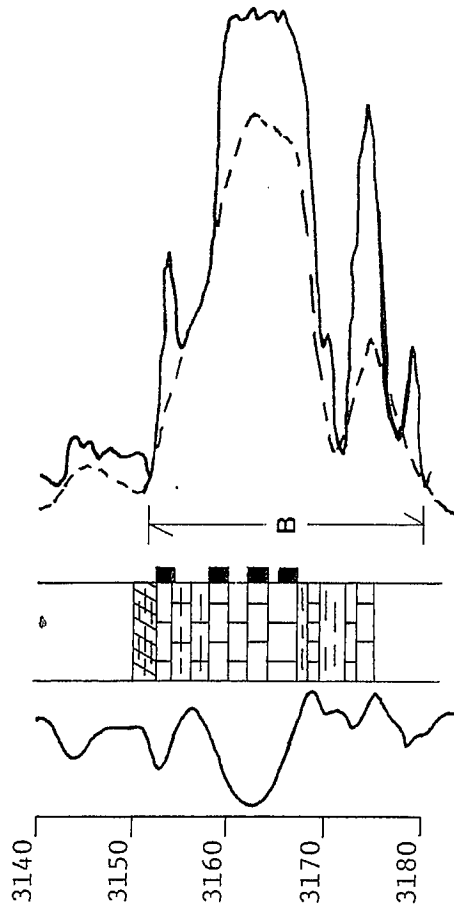
3171-72

Limestone - gray, dense, very shaly.

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

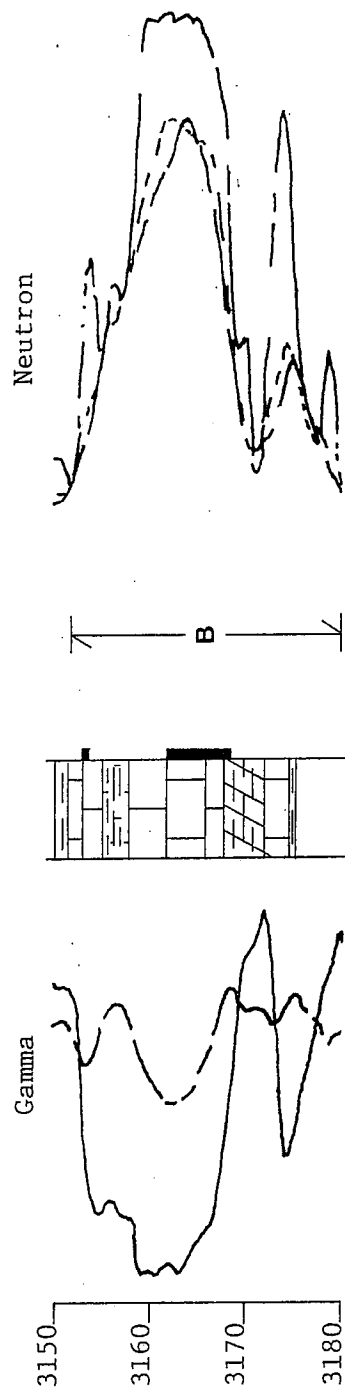
Resistivity

S.P.



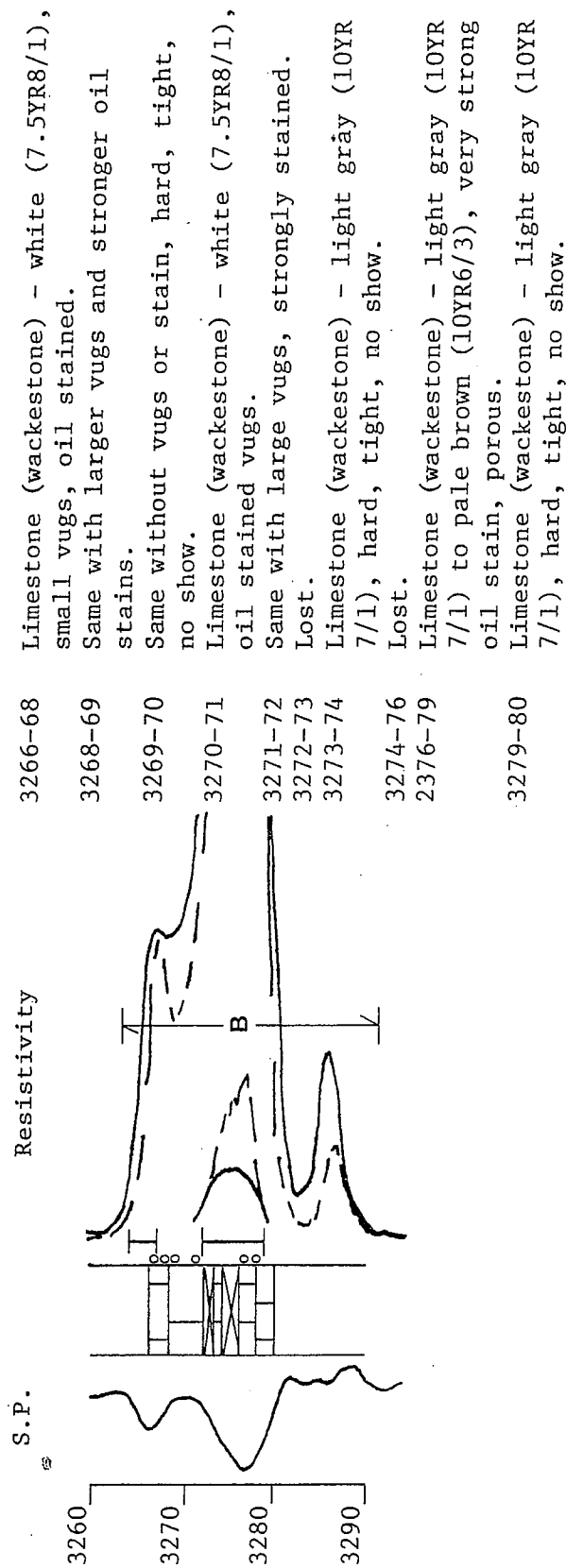
- 3150-52½ Shale - red and green.  
 3152½-54½ Limestone - finely crystalline, vuggy porosity, top six inches bleeding oil, next 18 inches oil spotted.  
 3154½-58 Limestone - very shaly.  
 3158-60 Limestone - finely crystalline, some shale filled fractures, bleeding oil.  
 3160-62 Limestone - finely 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.)

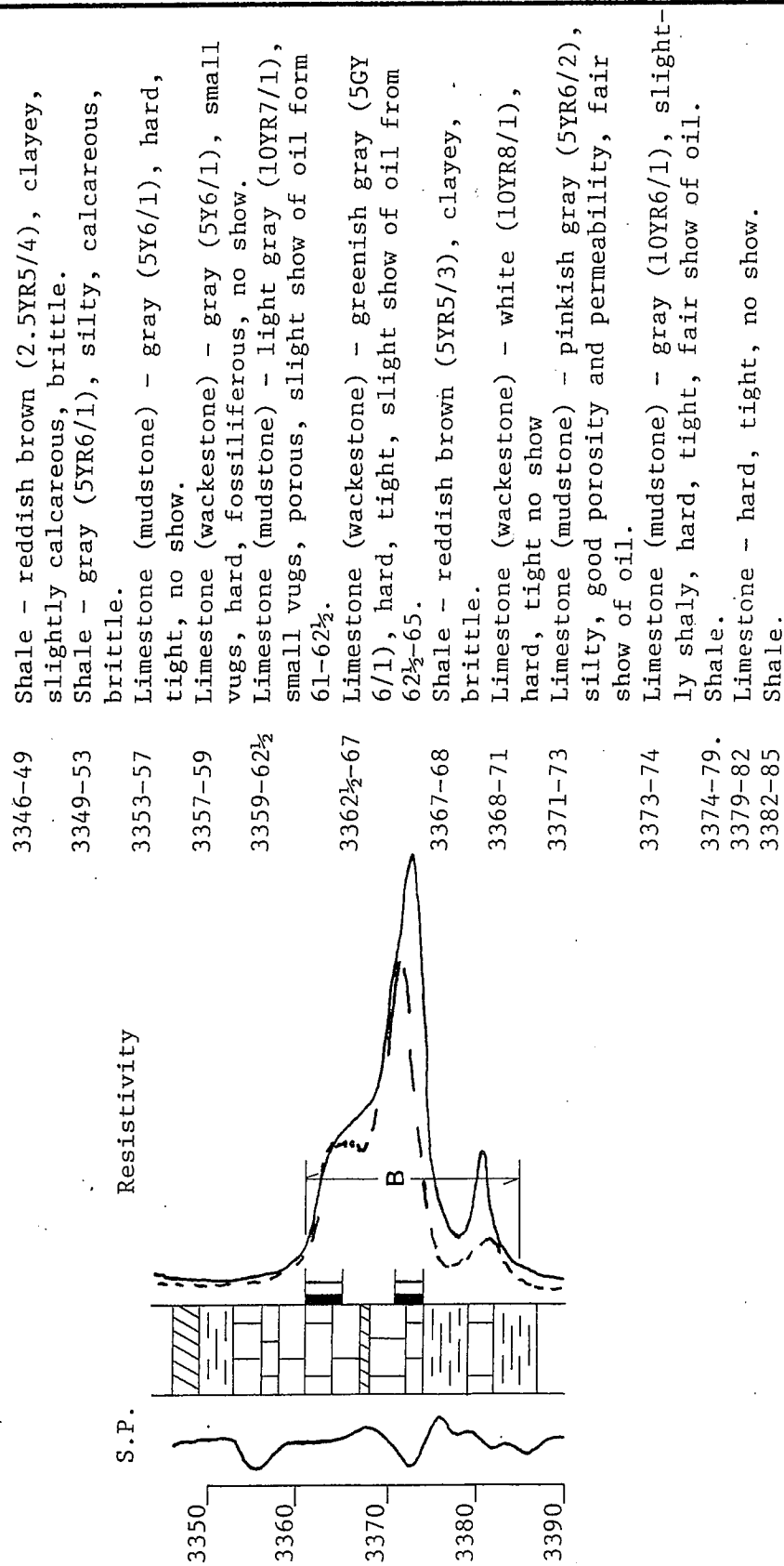


- 3150-51½ Shale - green.
- 3151½-52 ¾ Limestone - tan, dense, finely crystalline with green shale streaks.
- 3152 ¾-53½ Limestone - gray, fossiliferous, spotted porosity, bleeding in spots.
- 3153½-55 Limestone - gray, dense, fossiliferous with a few pieces of green shale.
- 3155-58 Shale - gray-green, 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 ¾ to 3166½.
- 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.

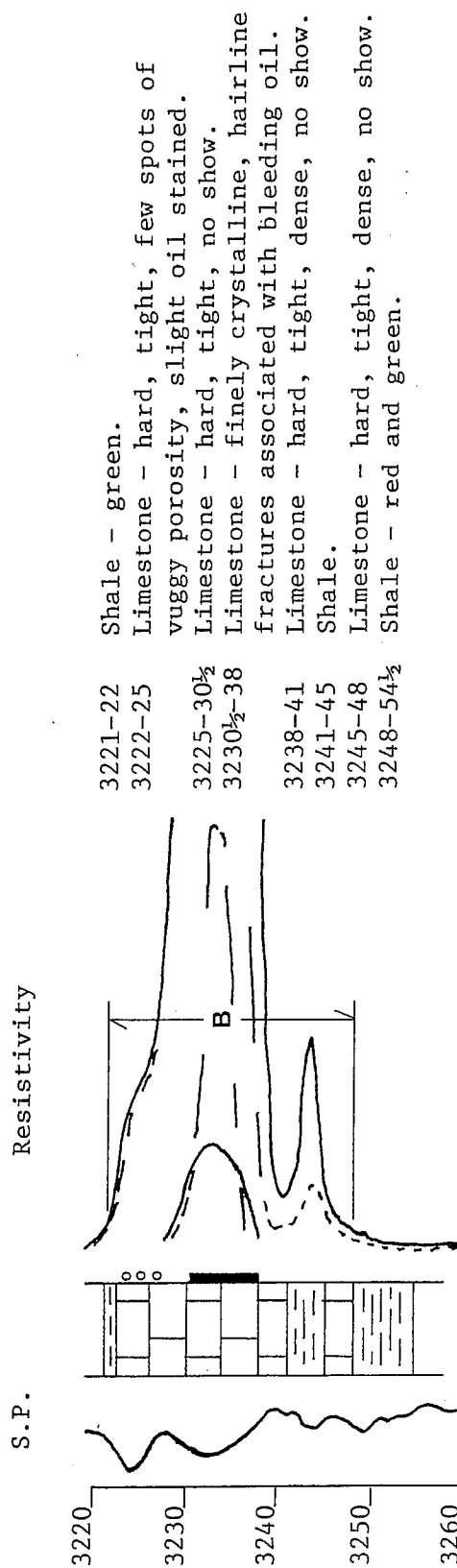
SUPERIOR No. 41-22 SPRINGER, NENE, 22-IN-27W, el 2556' (K.B.)\*



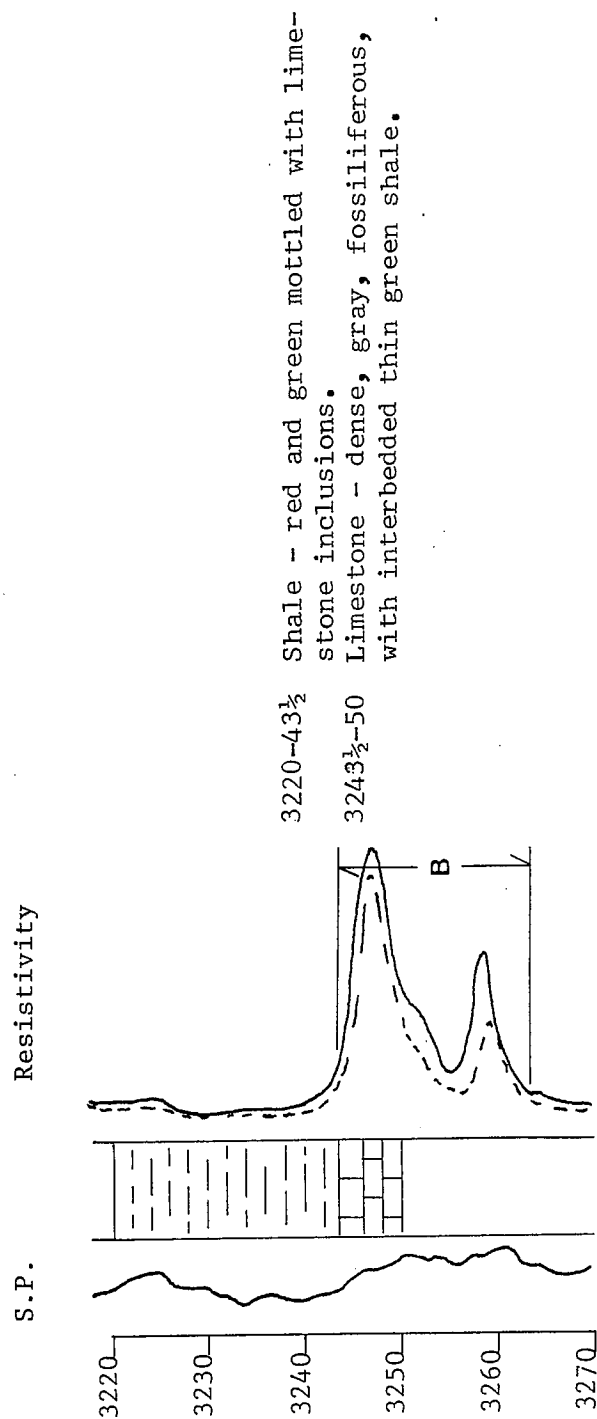
PETROLEUM MANAGEMENT No. 1 RYAN, C-NENE, 2-1N-28W, el. 2666' (K.B.)\*



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



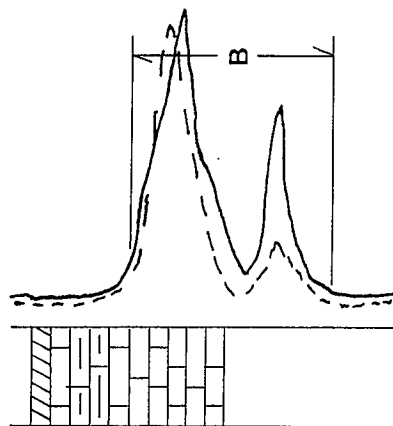
PLYMOUTH No. 1 LEMASTER, C-SESE, 13-2N-26W, el. 2500' (K.B.)\*



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

S.P. Resistivity

3300  
3310  
3320  
3330  
3340



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

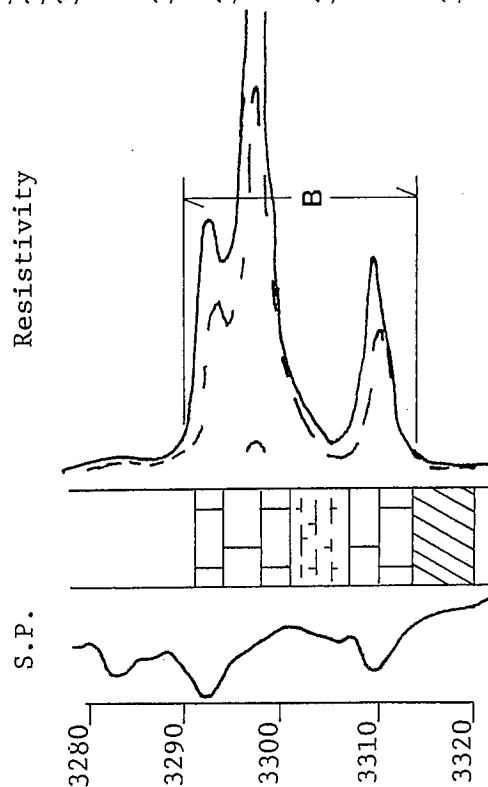
Limestone (mudstone) - white (5YR8/1) and brown (10YR5/3), no show, tight.

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.)\*

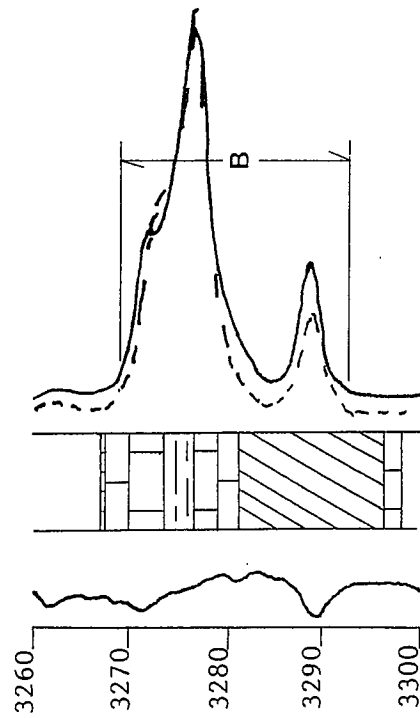
|          |                                                                                                                                                                  |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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.)

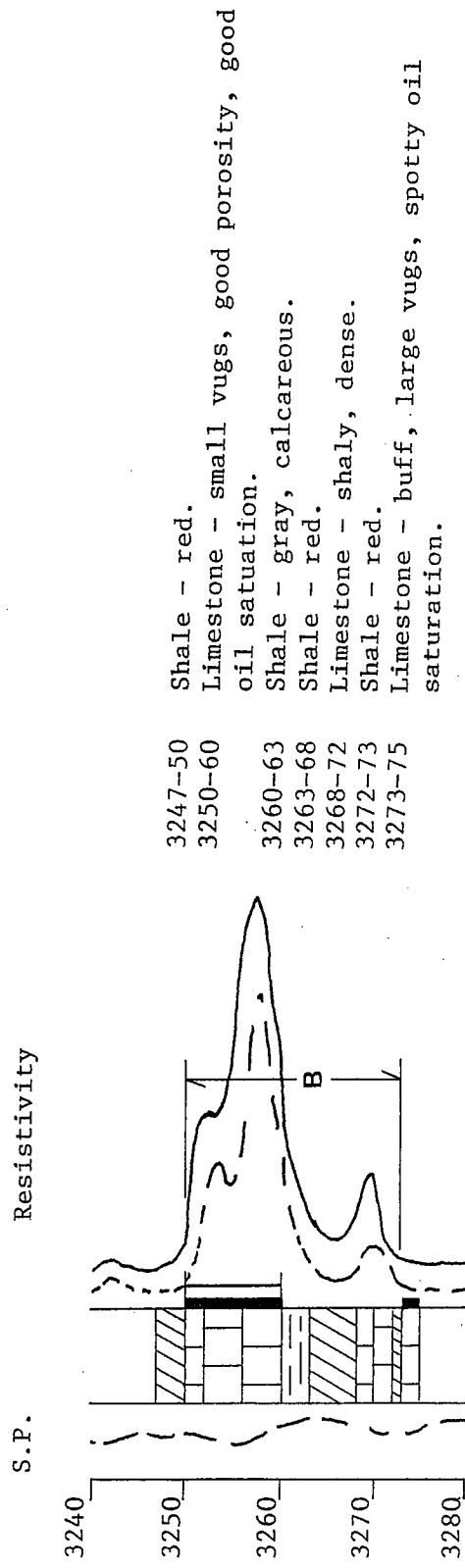
Resistivity

S.P.



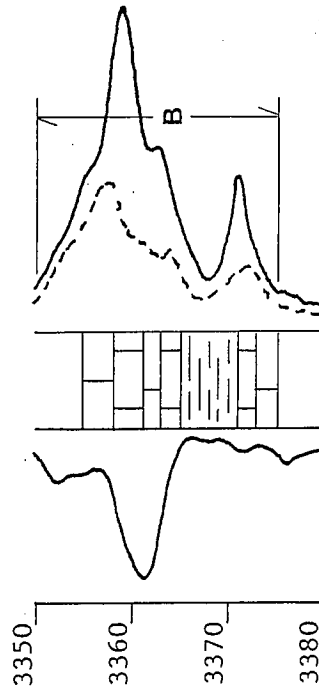
3267-67½ Limestone - dense, fractures.  
 3267½-73½ Limestone - gray, fossiliferous.  
 3273½-76½ Shale - gray with limestone pebbles.  
 3276½-81 Limestone - pink, gray, vuggy porosity,  
 no show.  
 3281-96½ Shale - maroon.  
 3296½-98 Limestone - gray, some vuggy porosity,  
 no show.

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



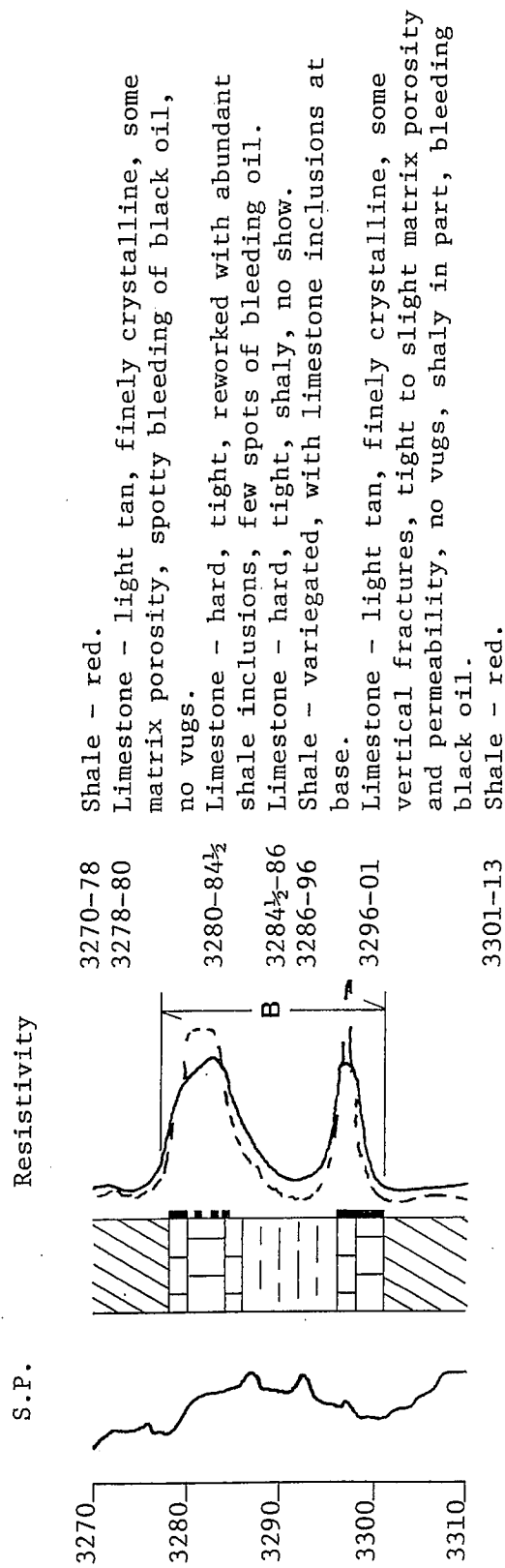
PUBCO No. 27-1 STOLLER, C-NENE, 27-2N-27W, el. 2628' (K.B.)

S.P. Resistivity

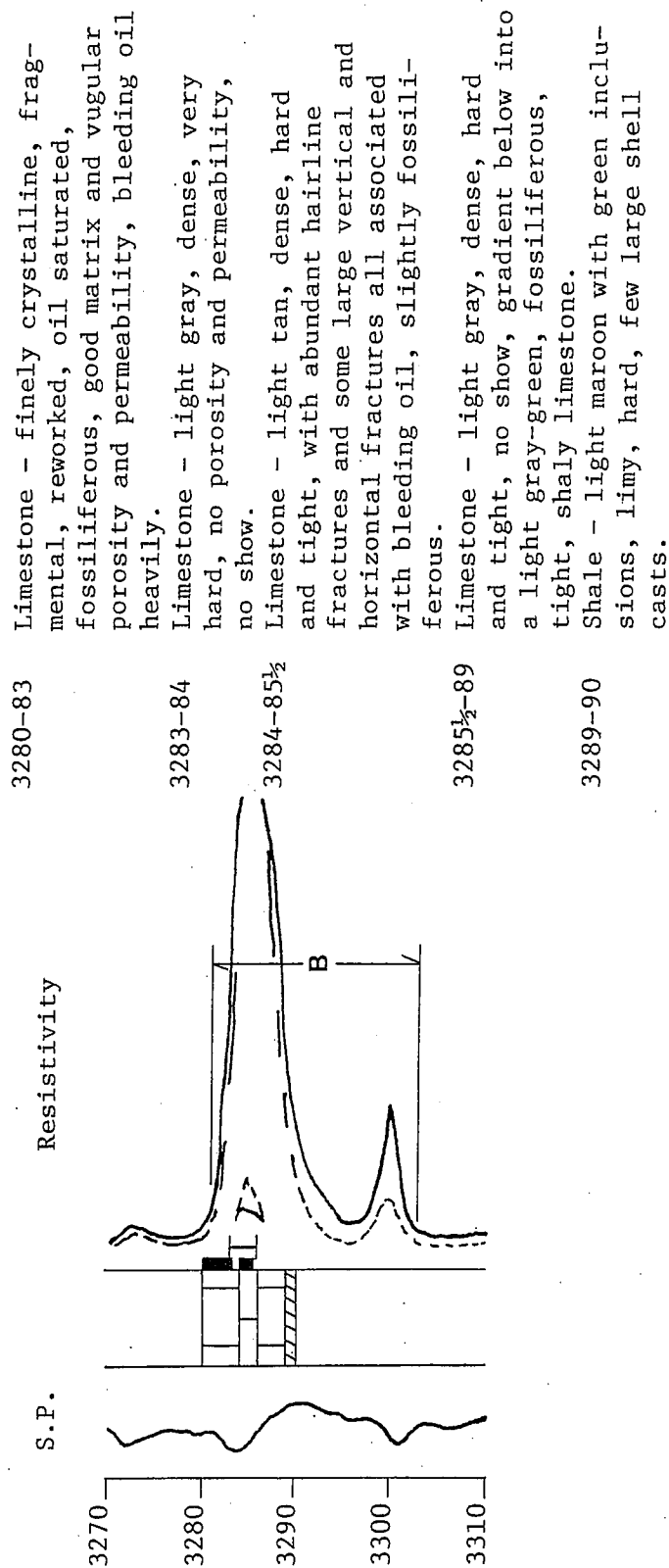


3355-61 Limestone - blue-gray, dense.  
 3361-65 Limestone - fossiliferous, good stain, small fractures.  
 3365-71 Shale - calcareous, gray.  
 3371-75 Limestone - shaly, dense.

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



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

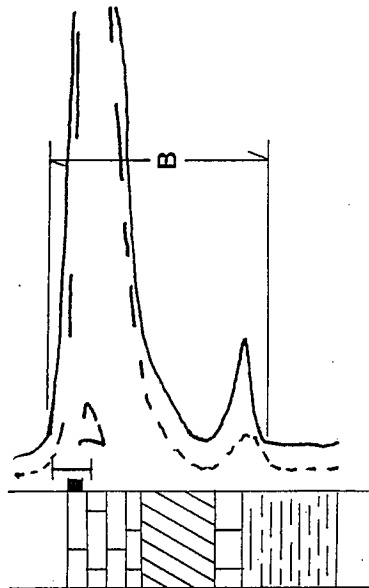


FRONTIER No. B-1 HOFMAN, C-SESW, 11-2N-28W, el. 2567' (K.B.)

# Resistivity

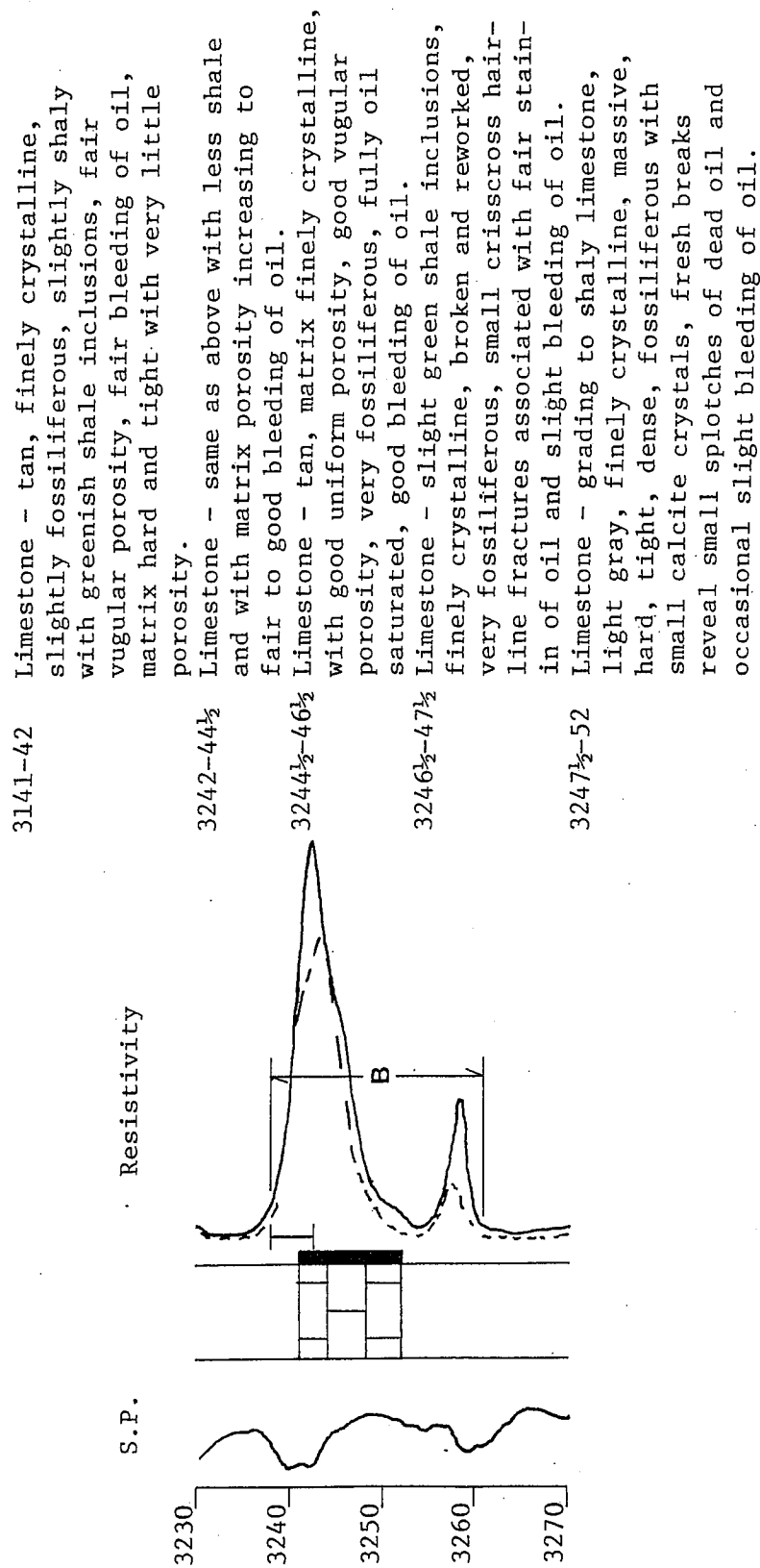
S.P.

3240  
3250  
3260  
3270  
3280



- 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.)



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

Resistivity

S.P.

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

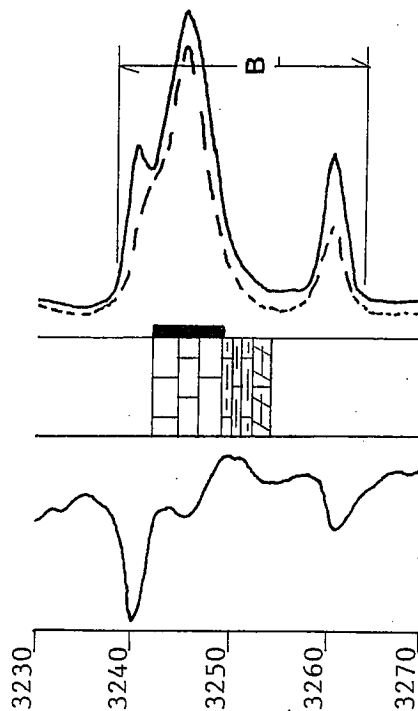
Limestone - tan, hard, tight, dense, finely crystalline, a few fair vugs with very slight bleeding of oil, grading to shaly limestone.

3249-52

Limestone - shaly, gray, hard, tight, dense, finely crystalline, scattered calcite crystals, no show.

3252-54

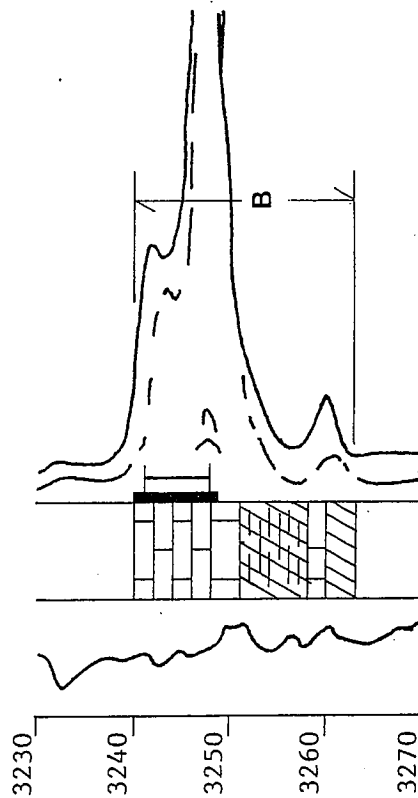
Limestone - shaly, as above, but with inclusions of maroon, massive shale.



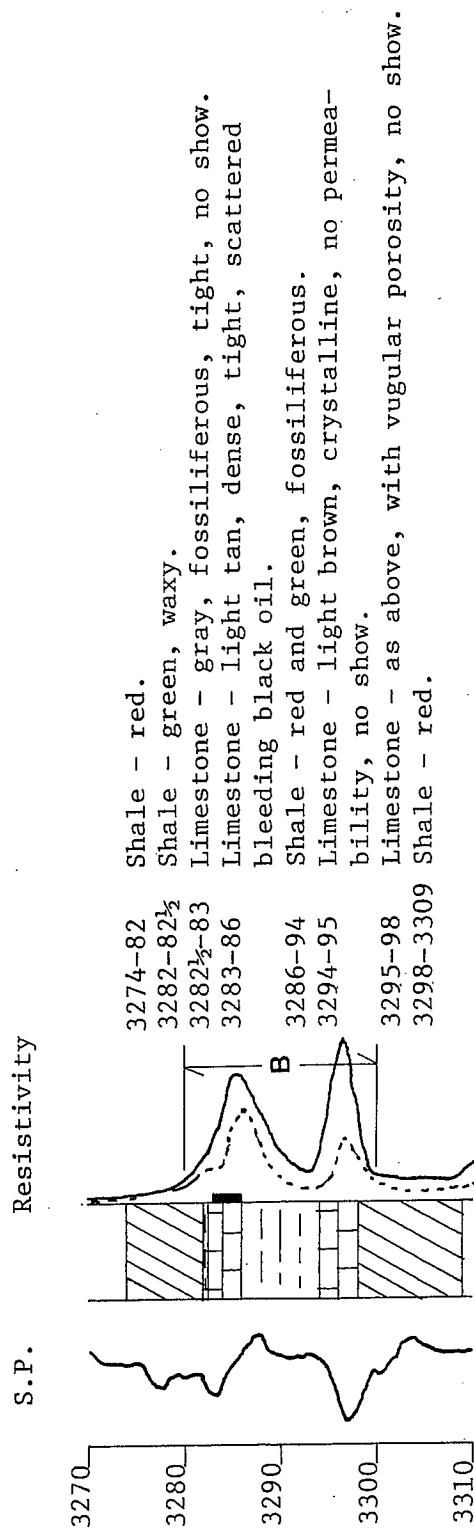
FRONTIER No. 2 HOFMAN, C-W/2-NWNE, 14-2N-28W, el. 2559' (K.B.)

Resistivity

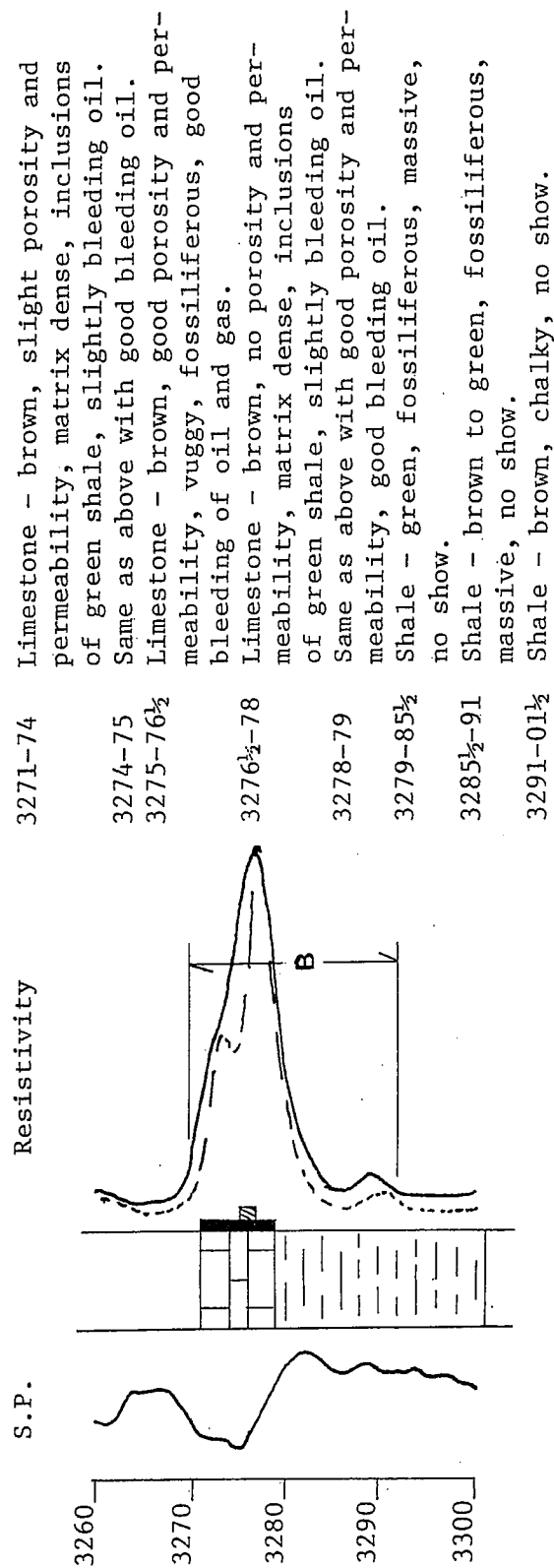
S.P.



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

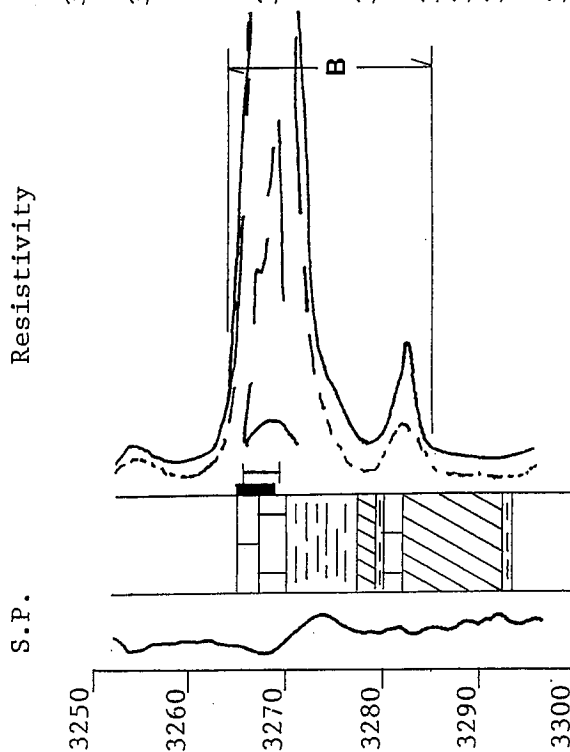


FRONTIER No. B-3 HOFMAN, C-NNW, 14-2N-28W, el. 2587' (K.B.)



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.                                                                                                                      |

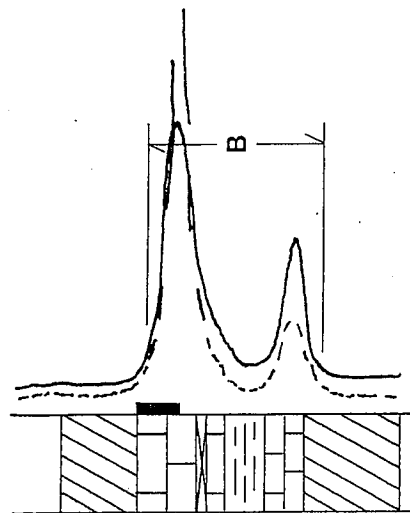


FRONTIER No. C-2 HOFMAN, C-NENW, 14-2N-28W, el. 2577' (K.B.)\*

S.P.

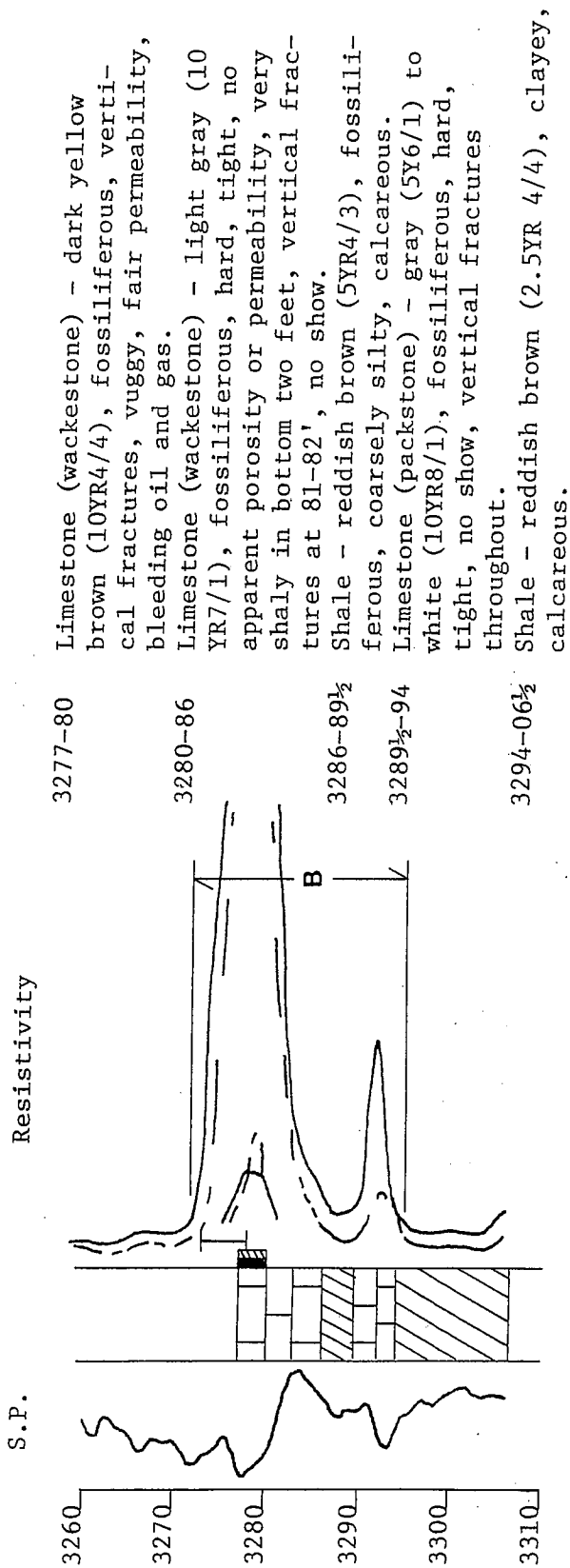
3250  
3260  
3270  
3280  
3290

Resistivity

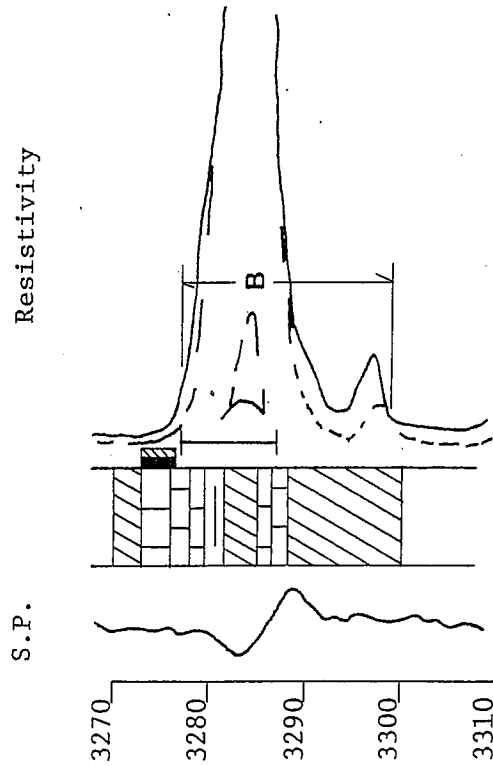


- 3255-62 Shale - reddish brown (5YR4/3), slightly silty.
- 3262-63 Shale - reddish brown (5YR4/3) and light gray (5Y7/1), clayey.
- 3263-67 Limestone (mudstone) - light gray (5Y7/1) with gray shale partings, occasional dark speckles of bleeding oil.
- 3267-69 Limestone (mudstone) - light gray (5Y7/1), 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-NNWSEW, 14-2N-28W, el. 2598' (K.B.)\*



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

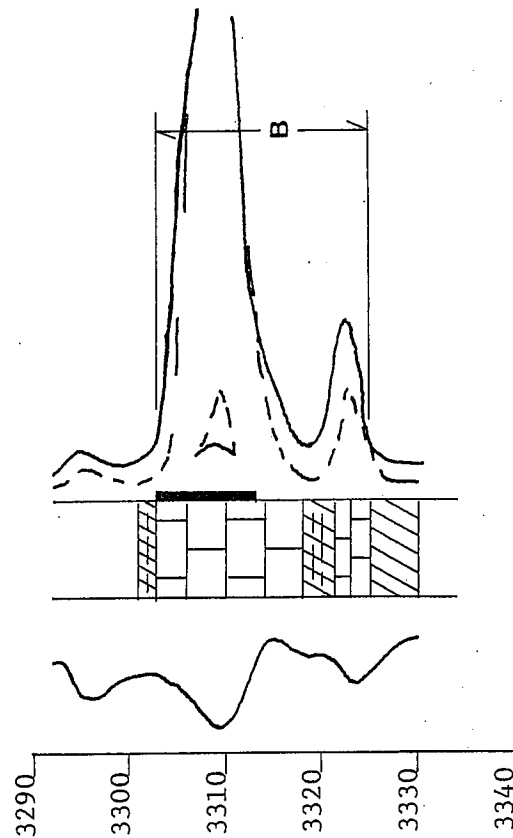


- 3270-73 Shale - red, gummy, waxy.  
 3273-74 Limestone - light gray to brown, shaly, slight porosity and permeability, fossiliferous, small vugs, no vertical fractures, bleeding oil and gas.  
 3274-76½ Limestone - light gray to brown, fossiliferous, few vugs, light porosity and permeability, bleeding 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.)

Resistivity

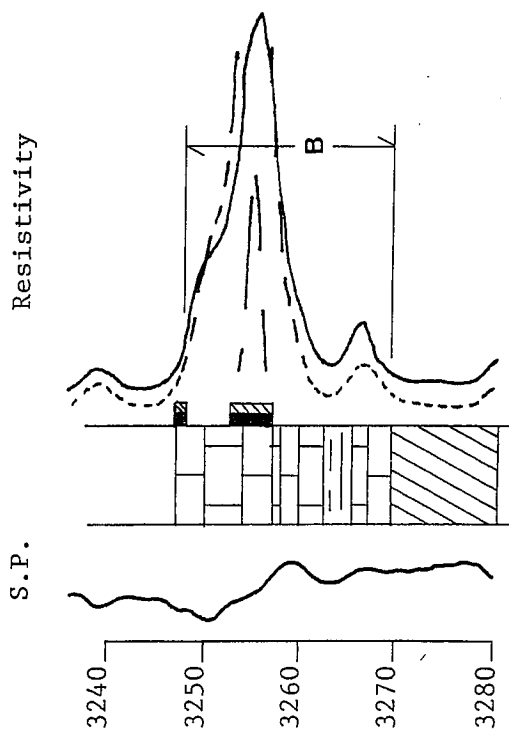
S.P.



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.  
 3318-21 1/2 Shale - red and green.  
 3321 1/2-25 Limestone - dense, hard, tight, no show.  
 3325-30 Shale - red.

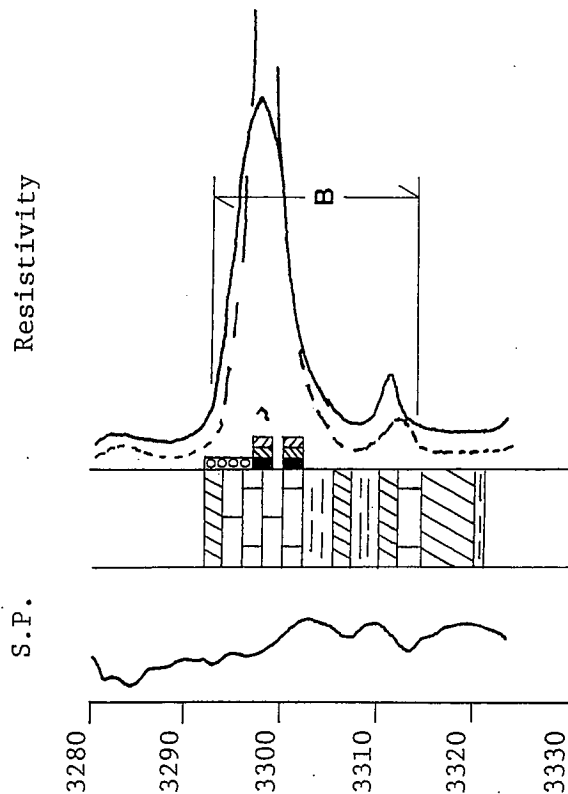
FRONTIER No. B-2 REINERS, SWSE, 14-2N-28W, el. 2567' (K.B.)

|           |                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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, intercalated 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 intercalations 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.                                                                                                                                                     |

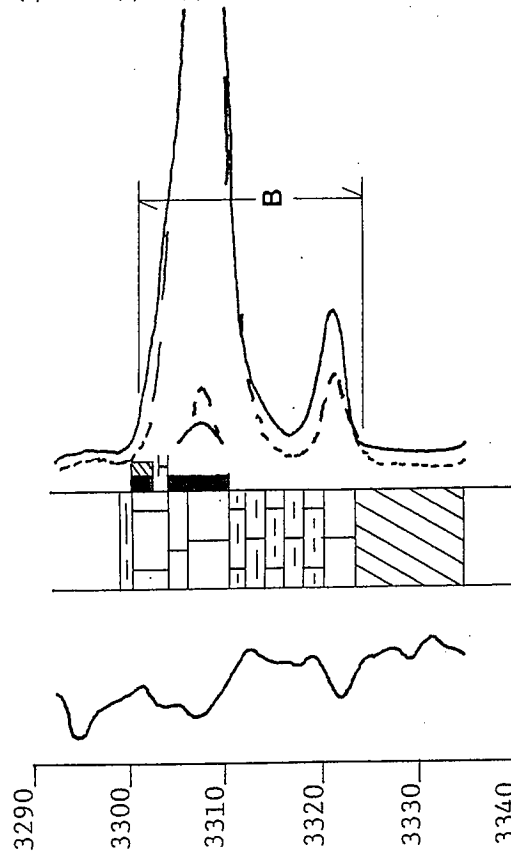


FRONTIER No. B-3 REINERS, C-SESE, 15-2N-28W, el. 2622' (K.B.)

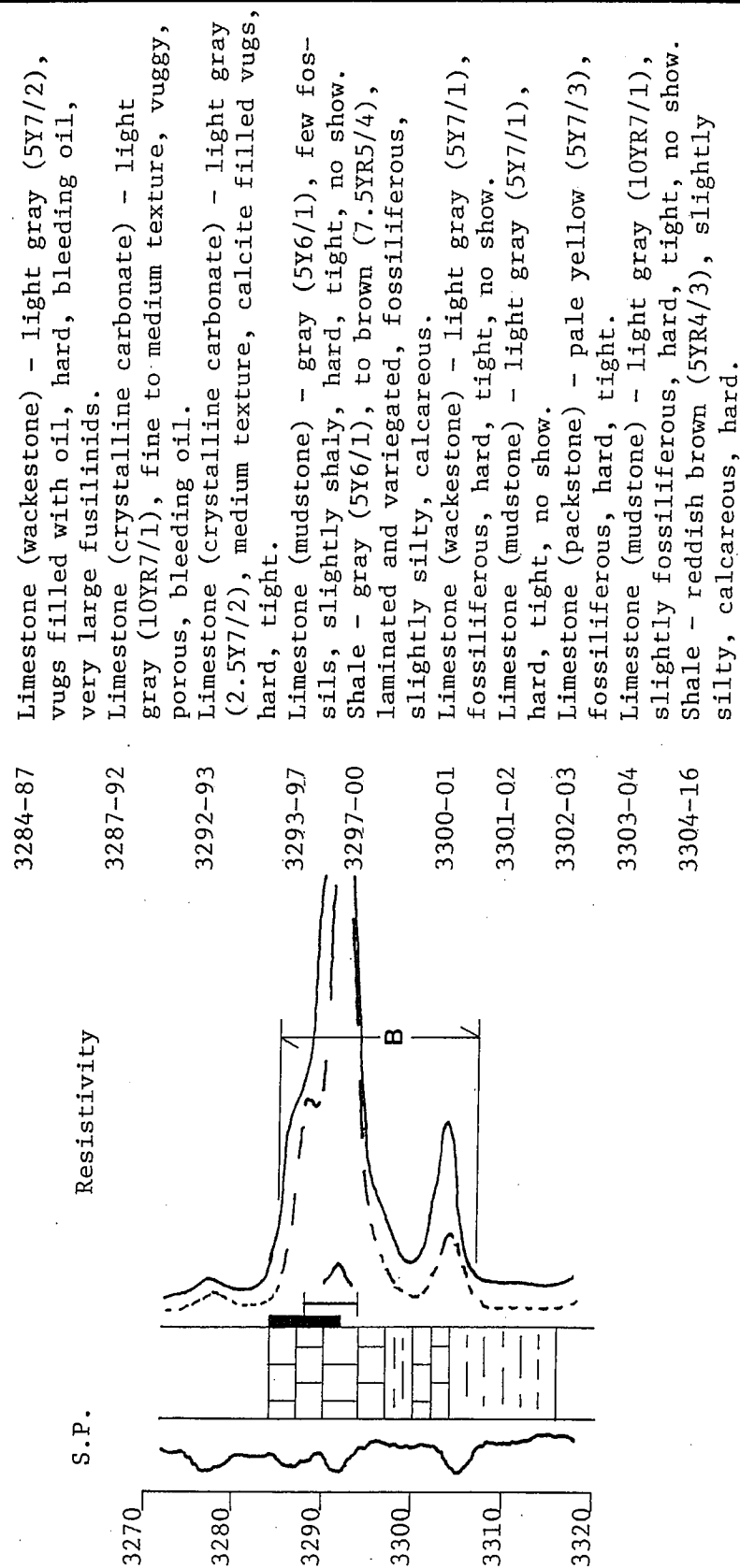
|           |                                                                                                                     |
|-----------|---------------------------------------------------------------------------------------------------------------------|
| 3299-00½  | Shale - green, waxy.                                                                                                |
| 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.                                                                                                  |

Resistivity

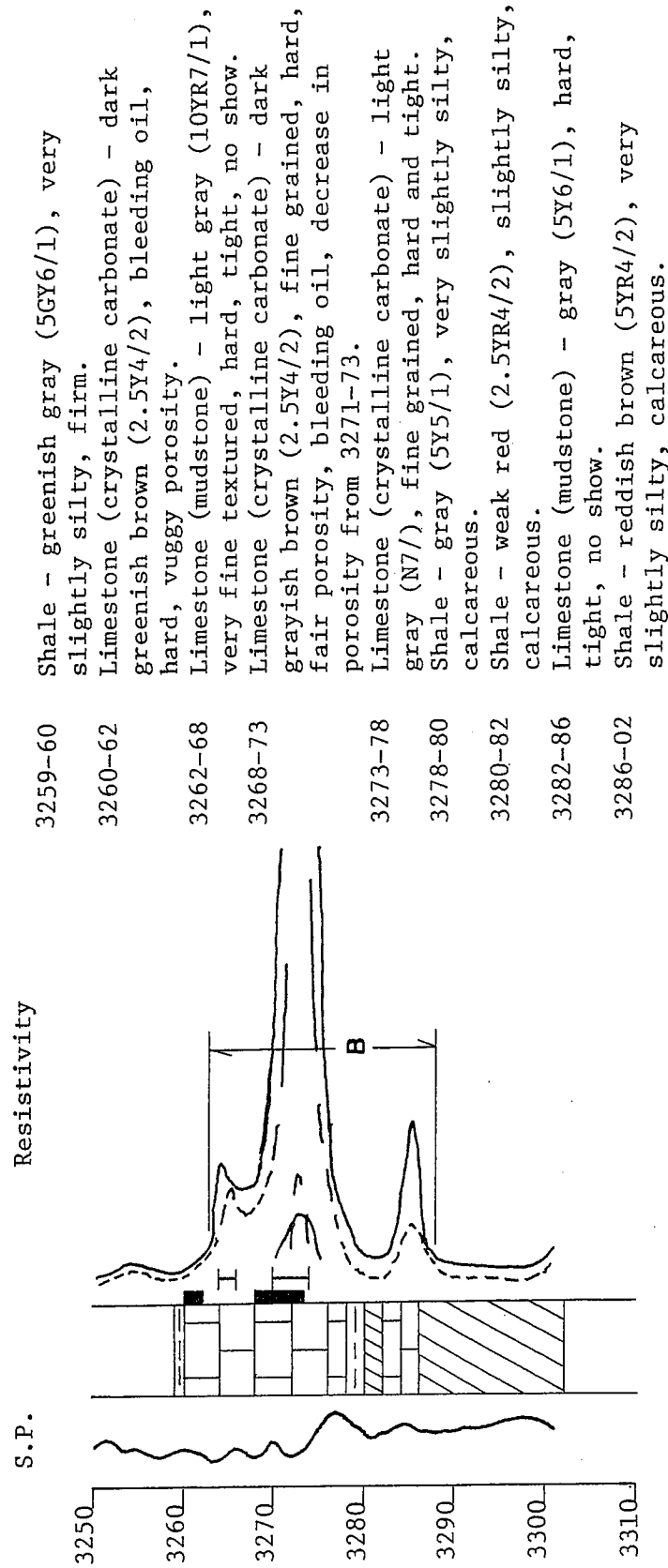
S.P.



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



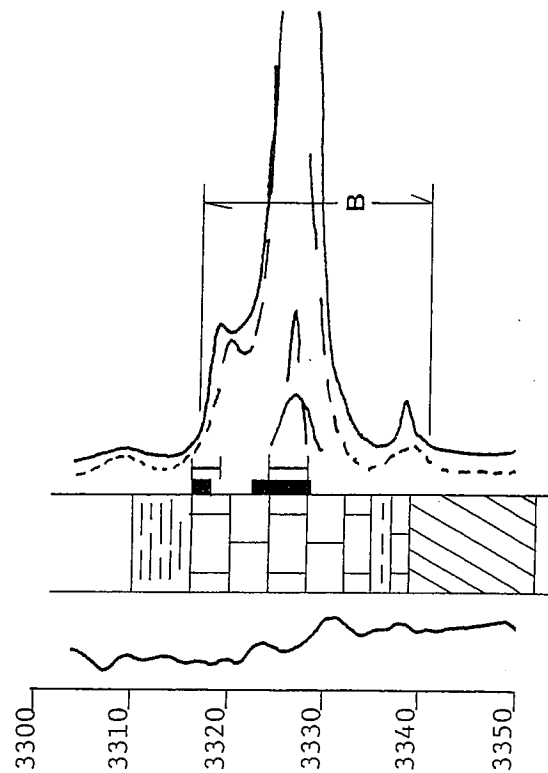
BRITISH AMERICAN AND VOLVENTINE No. 6 Newton, C-SESW, 22-2N-28W, el. 2586' (K.B.)



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

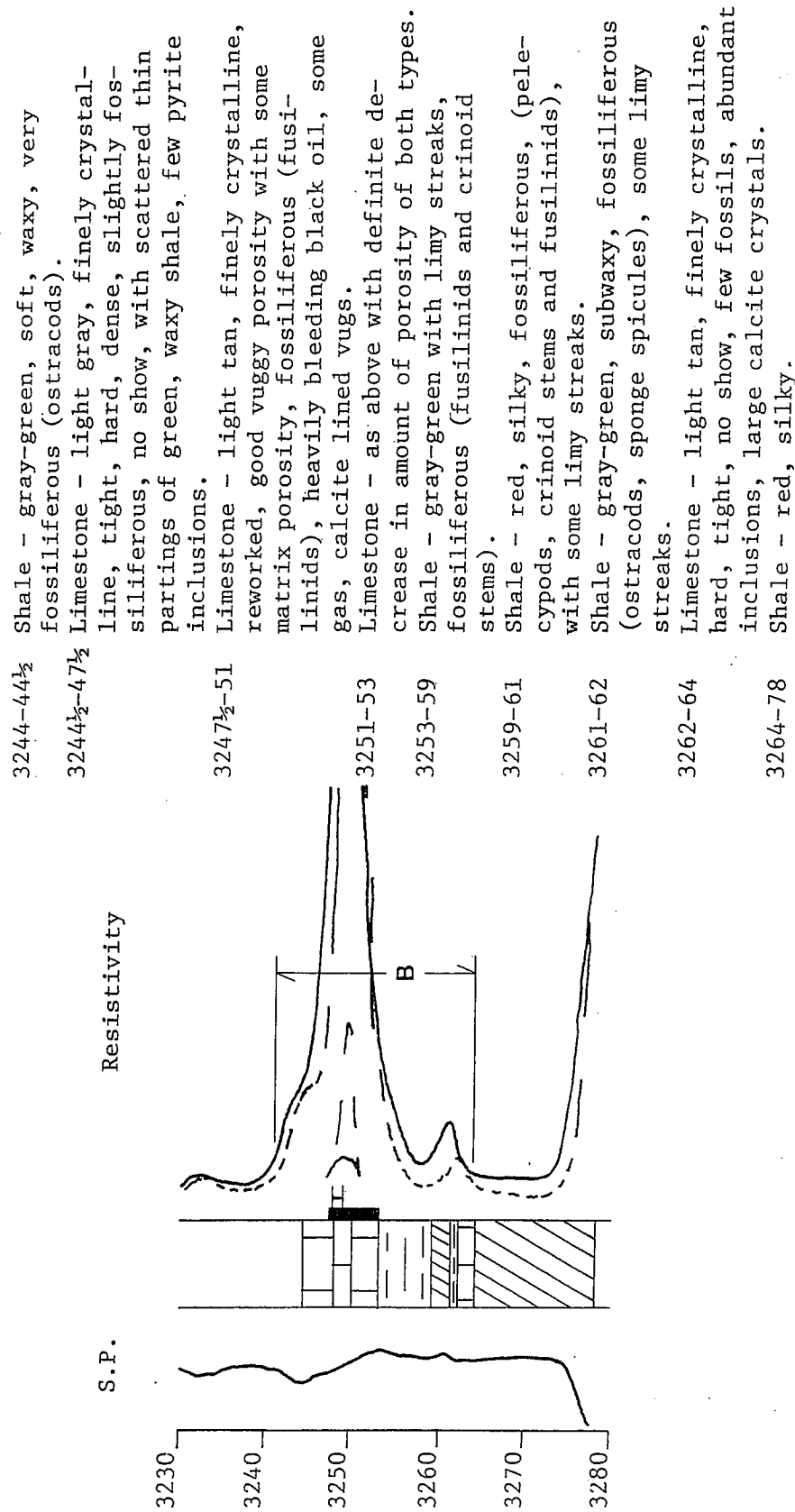
Resistivity

S.P.



|          |                                                                                      |
|----------|--------------------------------------------------------------------------------------|
| 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.                                                                         |

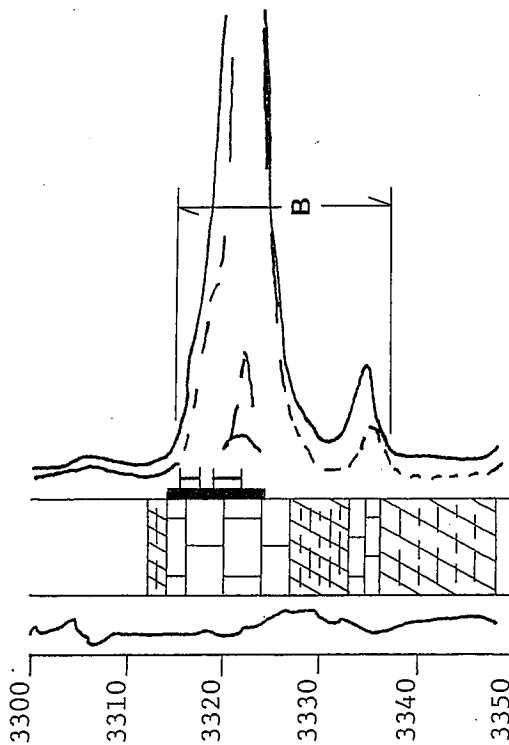
FRONTIER No. 5 REINERS, C-NWNE, 23-2N-28W, el. 2572' (K.B.)



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

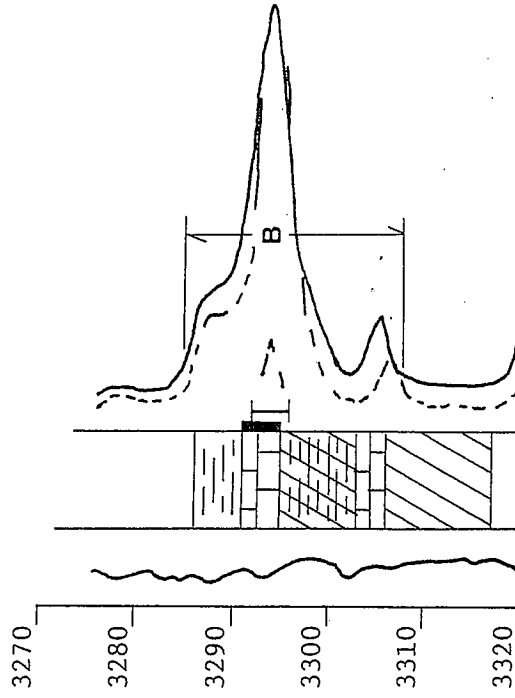
Resistivity

S.P.



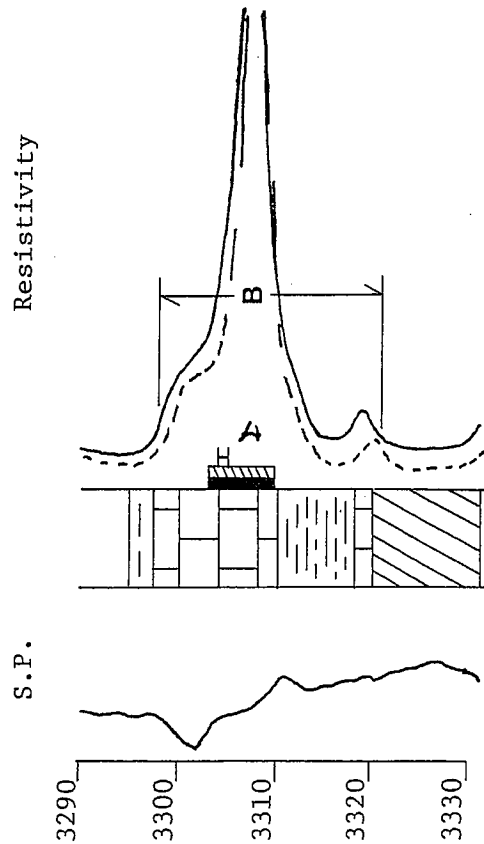
FRONTIER No. C-2 REINERS, C-NEW, 23-2N-28W, el. 2619' (K.B.)

S.P.



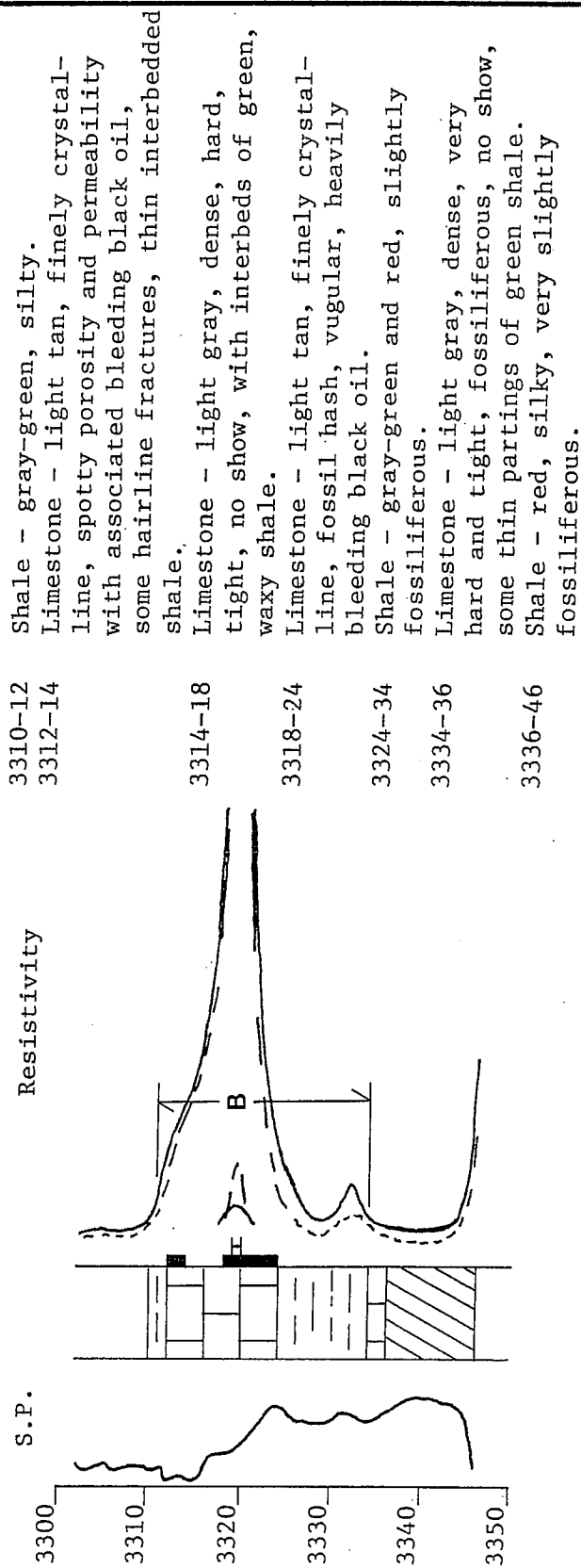
|         |                                                                     |
|---------|---------------------------------------------------------------------|
| 3286-91 | Shale - green.                                                      |
| 3291-95 | Limestone - dense, some vuggy porosity, oil 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.)

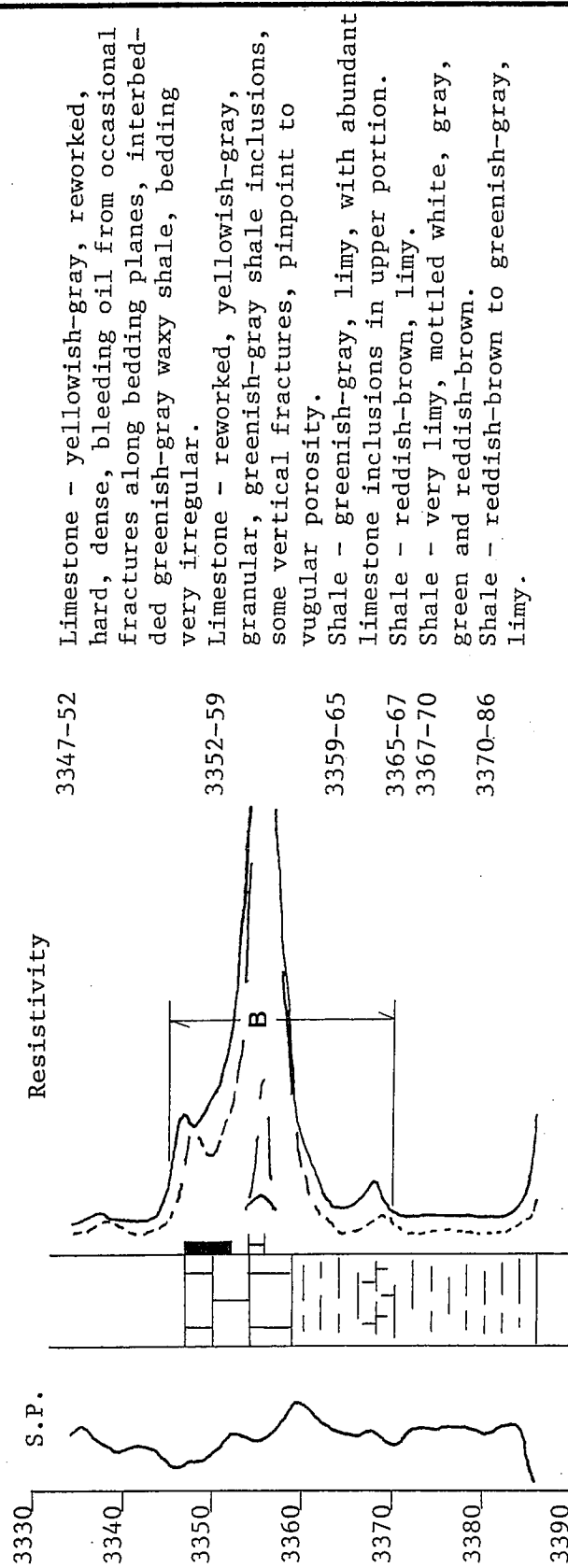


- 3295-97½ Shale - red to green, massive, fossiliferous.
- 3297½-00½ Limestone - gray, dense, fossiliferous, no porosity and permeability. very shaly, no show.
- 3300½-03 Limestone - gray, dense, no porosity and permeability, slightly shaly, fossiliferous, scattered vugs, no show.
- 3303-04 Limestone - 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.

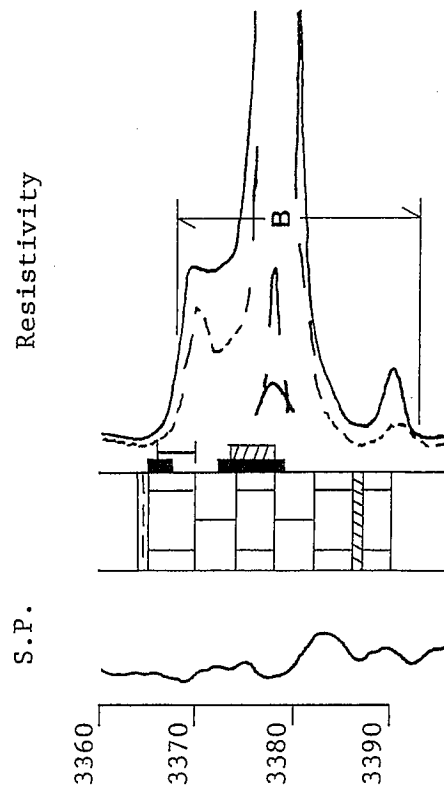
FRONTIER No. C-4 REINERS, C-SWNW, 23-2N-28W, el. 2646' (K.B.)



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



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.

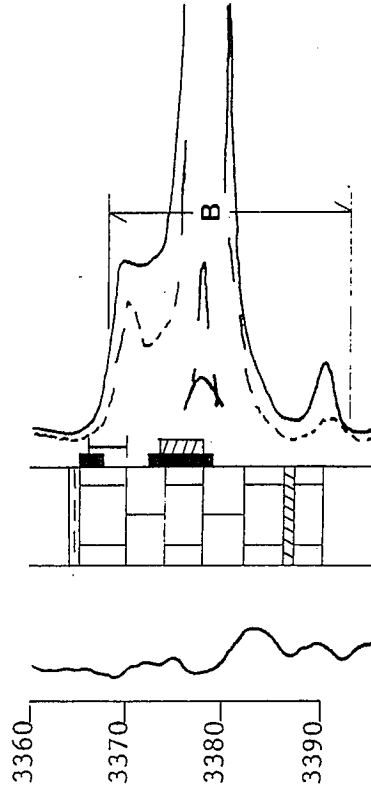
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- 3379-83 Limestone - buff at top, gray at base, slightly argillaceous, slightly fossiliferous and pyritic, hard, tight, no show.
- 3383-86 Limestone, gray, finely crystalline, hard, tight, no show, abundant irregular partings and streaks of gray, 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.

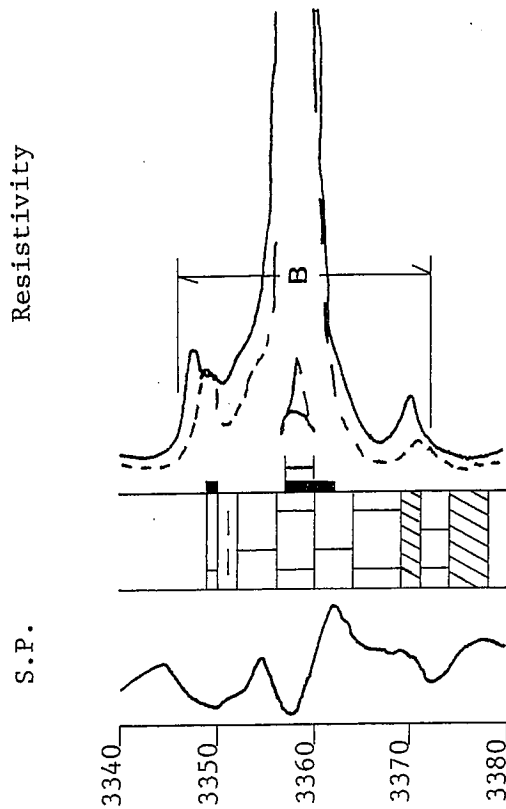
Resistivity

S.P.



BURCH No. 1 WINTERS, C-NWSE, 27-2N-28W, e1. 2666' (K.B.)\*

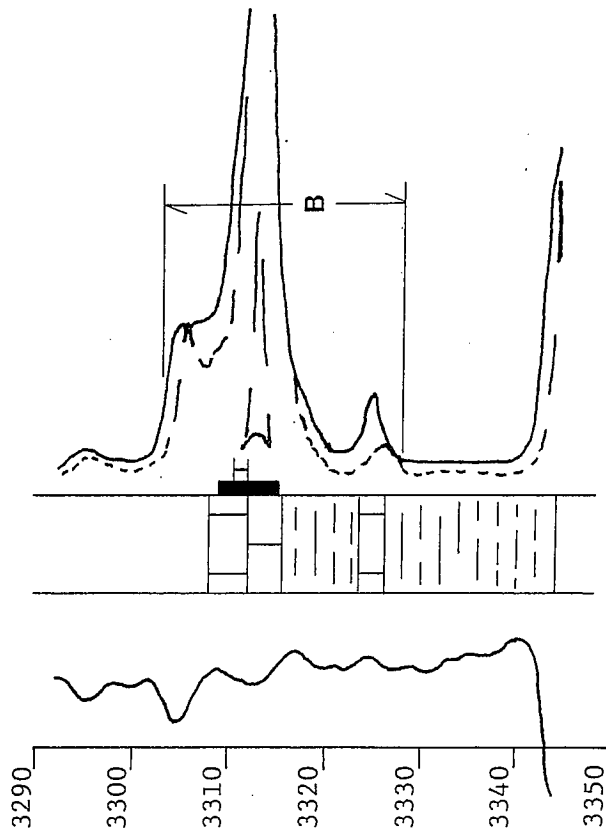
|         |                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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.)

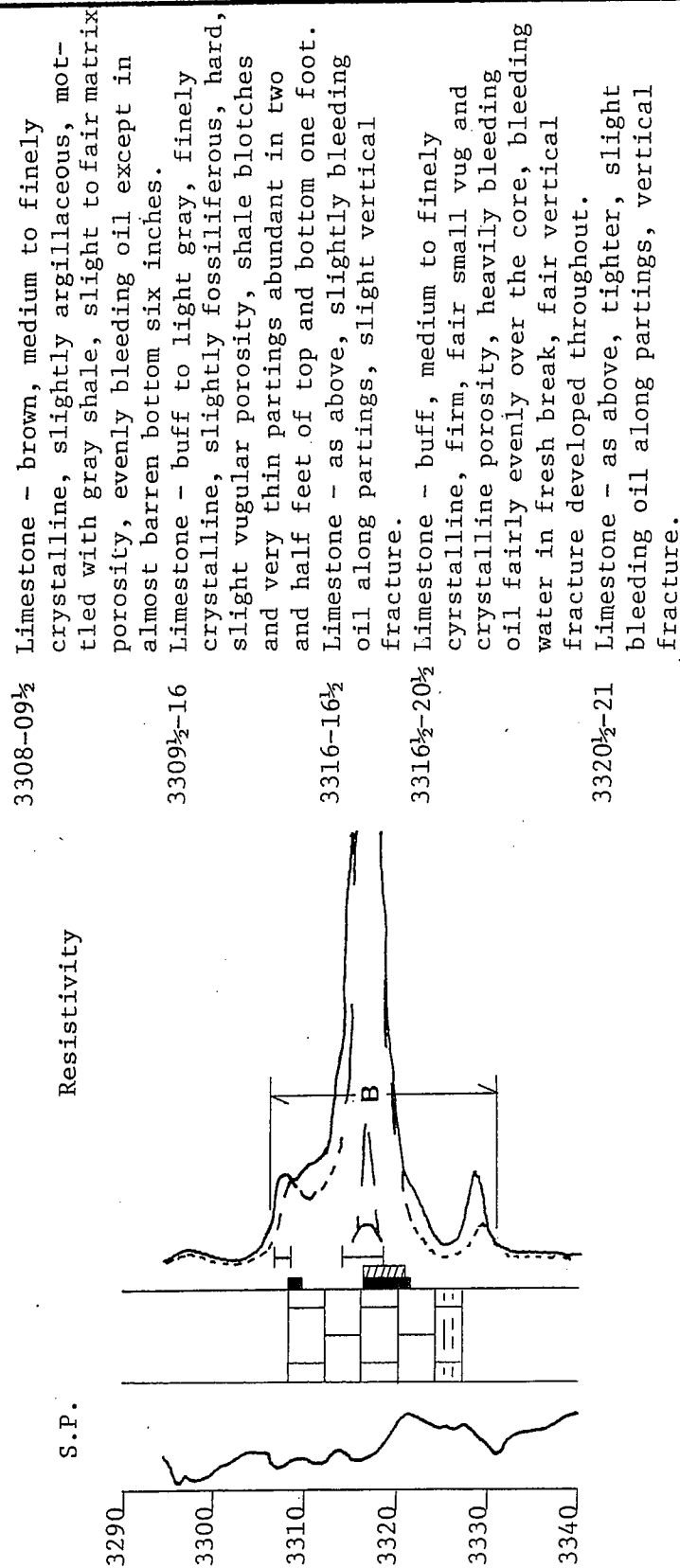
S.P.

Resistivity



- 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.

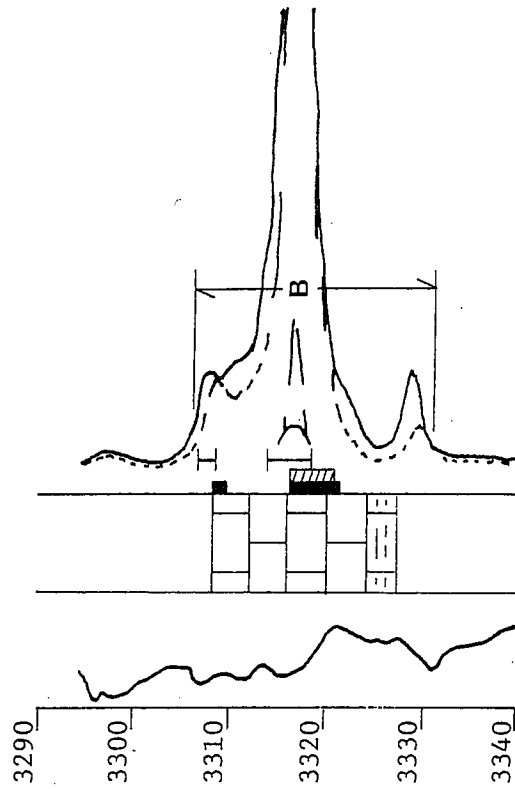
FRONTIER No. B-2 HAAG, C-NWNE, 27-2N-28W, el. 2636' (K.B.)



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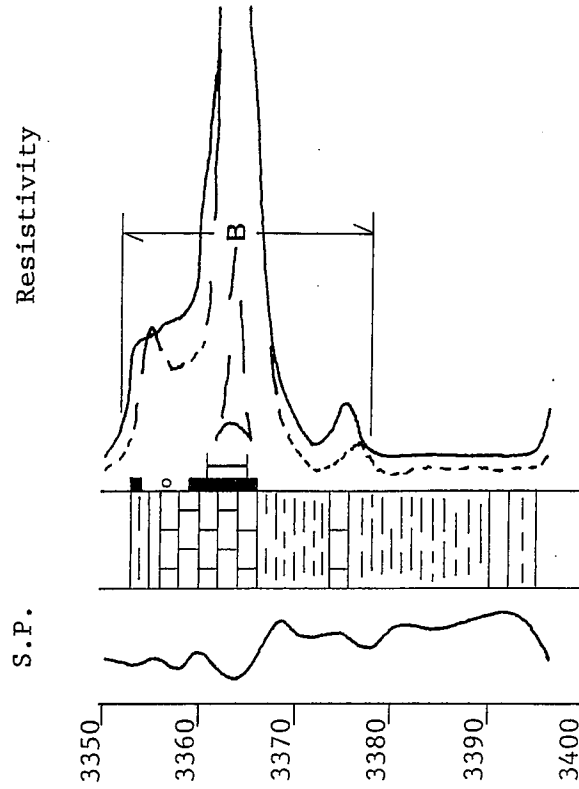
Resistivity



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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.)



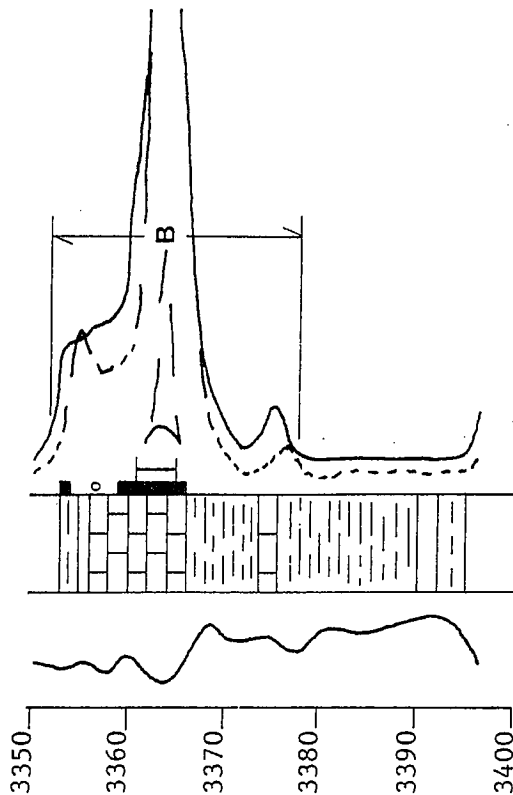
|         |                                                                                                                           |
|---------|---------------------------------------------------------------------------------------------------------------------------|
| 3353-54 | Shale - green, fossiliferous 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, tight, 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 intercalated, 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.   |

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Resistivity

S.P.

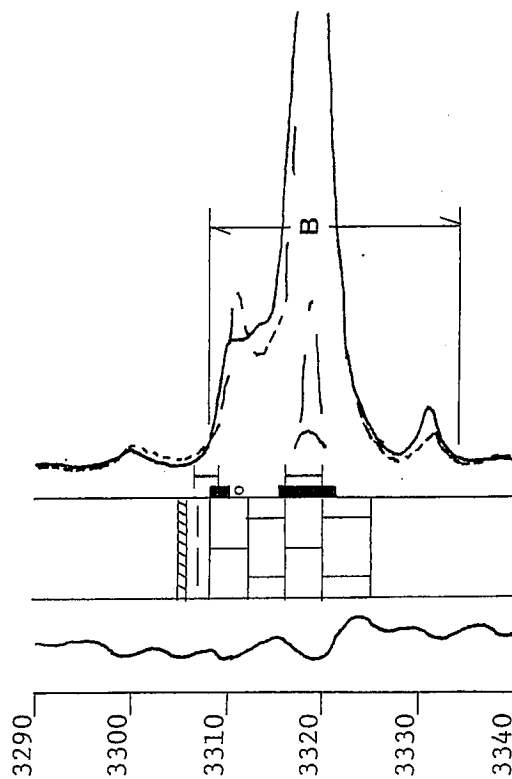


- 3366-67 Limestone - pale green, very finely crystalline, shaly, dense, tight, no show, slightly fossiliferous, vertical fractures.
- 3367-70 Shale - pale green, silky, limy, no show, slightly fossiliferous, vertical fractures.
- 3370-72 Shale - as above, very fossiliferous.
- 3372-73 Shale - red, silky, 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.)

Resistivity

S.P.



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

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

## FIELD CODES\*

## STATUS CODES

AK - Ackman  
 BC - Bed Canyon  
 BG - Barger  
 BS - Base  
 BT - Bartley  
 DB O 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

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.

| S E C | T R W | LEGAL | WELL     | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|----------|-------------|-------------|-----------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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    | SENE     | Townsend 1  | Savage      | 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      | Gen. 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          | -             |                                                                                                |           |

| S E C | T R W | LEGAL  | WELL         | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L H | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L       |
|-------|-------|--------|--------------|--------------|-------------|-----------|-----------------------|-----------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------------|
| 34    | 1     | C-NWSE | Warner 1     | Akmar        | DA          | WC        | 2555                  | ----            | ---           | ----     | -           | 112469          | 120269          | -             |                                                                                                |                 |
| "     | "     | C-SENE | " 1          | Sauvage      | DA          | WC        | 2528                  | 3353            | 17            | -825     | -           | 042961          | 080961          | -             |                                                                                                |                 |
| 35    | 1     | C-SENE | Kilzer 1     | "            | DA          | WC        | 2560                  | 3379            | 20            | -819     | -           | 062861          | 070561          | -             |                                                                                                |                 |
| 36    | 1     | C-NENW | State A-1    | Slawson      | OW          | WC        | 2521                  | 3339            | 21            | -818     | 50          | 091370          | 111270          | M             |                                                                                                |                 |
| 1     | 1     | C-SWNE | Gay 1        | Burch        | OW          | WC        | 2504                  | 3244            | 26            | -740     | 30          | 042762          | 061562          | S             | 3246-56                                                                                        | 10              |
| "     | "     | SENE   | 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     | NWNE   | 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     | 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             | 3297 $\frac{1}{2}$ -02                                                                         | 4 $\frac{1}{2}$ |
| "     | "     | 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     | C-SENE | 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               |

| S E C | T R W | LEGAL  | WELL          | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|--------|---------------|--------------|-------------|-----------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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. Drils. | 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 | " R-1         | "            | OW          | NM        | 2439                  | 3170          | 25            | -731     | 40          | 031864          | 111564          | S             | 3171-82                                                                                        | 11        |

| S E C | T R W | LEGAL | WELL   | OPERATOR     | S T A T U S  | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L       |     |
|-------|-------|-------|--------|--------------|--------------|-----------|-----------------------|-----------------|-----------------|------------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------------|-----|
| 10    | 1     | 27    | C-SESW | Messner B-2  | Murfin       | OW        | MW                    | 2436            | 3162            | 24         | -726        | 10              | 010475          | 032575        | S                                                                                              | 3162-65/3167-68 |     |
|       |       |       |        |              |              |           |                       |                 |                 |            |             |                 |                 |               |                                                                                                | 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  |

| S E C | T R W | LEGAL | WELL   | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|-------------|-------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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-SENE | 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-SENE | " 1-4       | "           | OW SD     | 2463                  | 3168            | 28              | -705     | 51          | 052871          | 060671          | M             | 3176-84                                                                                        | 8         |
| "     | "     | "     | C-SENE | " 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        |

| S E C | T N | R W | LEGAL    | WELL       | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L | " B D E P T H | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-----|-----|----------|------------|-------------|-------------|-----------|-----------------------|---------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 23    | 1   | 27  | C-SESW   | Axtel A-2  | K. & E.     | OW          | MW        | 2573                  | 3296          | 31            | -723          | 96       | 111861      | 122261          | 122261          | S             | 3297-00/3310-13                                                                                | 6         |
| "     | "   | "   | C-NESE   | " A-3      | "           | DA          | MW        | 2455                  | 3191          | 25            | -736          | -        | 022662      | 030462          | 030462          | -             |                                                                                                |           |
| "     | "   | "   | C-SWSE   | " 2        | "           | WI          | MW        | 2529                  | 3259          | 25            | -730          | 68       | 112461      | 123061          | 123061          | S             | 3260-71                                                                                        | 11        |
| "     | "   | "   | C-SWNE   | H. Boyd 1  | "           | OW          | MW        | 2518                  | 3241          | 37            | -723          | 127      | 111261      | 112661          | 112661          | S             | 3242-62                                                                                        | 20        |
| "     | "   | "   | C-SENE   | " 1        | Franco      | DA          | MW        | 2529                  | 3252          | 28            | -723          | -        | 030562      | 031162          | 031162          | -             |                                                                                                |           |
| "     | "   | "   | C-SWNW   | " 2        | K. & E.     | OW          | MW        | 2537                  | 3244          | 29            | -707          | 80       | 102961      | 111061          | 111061          | S             | 3244-45/3252-60                                                                                | 9         |
| "     | "   | "   | C-NWSW   | Sullivan 1 | Texaco      | OW          | MW        | 2565                  | 3277          | 29            | -712          | 121      | 031662      | 040162          | 040162          | M             | 3278-94                                                                                        | 16        |
| "     | "   | "   | C-NWNW   | Boyd 1     | K. & E.     | WI          | WC        | 2503                  | 3213          | 27            | -710          | 110      | 022861      | 031861          | 031861          | S             | 3214-16/3221-26                                                                                | 7         |
| "     | "   | "   | C-NWNE   | H. " 2     | "           | WI          | MW        | 2509                  | 3233          | 31            | -724          | 54       | 011762      | 012762          | 012762          | S             | 3237-40/3246-50                                                                                | 7         |
| "     | "   | "   | C-SWSW   | Sullivan 2 | Texaco      | WI          | MW        | 2486                  | 3295          | 31            | -709          | 57       | 033062      | 041162          | 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          | 090468          | M             | 3263                                                                                           | .1        |
| "     | "   | "   | C-NWNWSE | Townsend 1 | Dunn & S.   | DA          | WC        | 2529                  | 3257          | 27            | -728          | -        | 080356      | 081256          | 081256          | -             |                                                                                                |           |
| 27    | 1   | 27  | C-SESW   | Axtel 1    | Farmer      | DA          | SK        | 2575                  | -----         | ---           | ---           | -        | 033066      | 040666          | 040666          | -             |                                                                                                |           |
| "     | "   | "   | C-NENE   | Thomas A-1 | Cities Svc. | WI          | MW        | 2584                  | 3292          | 28            | -708          | 214      | 051863      | 052663          | 052663          | S             | 3288-94/3299-03                                                                                | 10        |
| "     | "   | "   | SWNE     | " A-2      | "           | OW          | MW        | 2523                  | 3228          | 28            | -705          | 35       | 070663      | 071563          | 071563          | S             | 3228-34/3238-42                                                                                | 10        |
| "     | "   | "   | C-SESE   | Witt 1     | Farmer      | OW          | SK        | 2566                  | 3272          | ---           | -706          | 108      | 030866      | 032066          | 032066          | S             | 3276-86                                                                                        | 10        |
| 33    | 1   | 27  | C-NWNE   | Martin 1   | Christie S. | DA          | WC        | 2553                  | 3271          | 29            | -718          | -        | 071462      | 072162          | 072162          | -             |                                                                                                |           |
| "     | "   | "   | NWNW     | Moyer 1    | Kay         | DA          | WC        | 2546                  | 3290          | 29            | -744          | -        | 090954      | 091954          | 091954          | -             |                                                                                                |           |
| 34    | 1   | 27  | C-SENE   | Osburn 1   | Farmer      | OW          | WC        | 2605                  | 3303          | 30            | -698          | 90       | 030865      | 032065          | 032065          | S             | 3305-09                                                                                        | 4         |
| "     | "   | "   | C-NWSW   | " B-1      | "           | DA          | SK        | 2621                  | -----         | ---           | ---           | 3        | 110874      | 110974          | 110974          | M             | 3336-39                                                                                        | 32        |
| "     | "   | "   | NWSW     | " 1        | Hewit       | DA          | SK        | 2621                  | 3320          | 35            | -699          | -        | 121766      | 122366          | 122366          | -             |                                                                                                |           |
| "     | "   | "   | C-NWNE   | Thomas 1   | Farmer      | OW          | SK        | 2564                  | -----         | ---           | ---           | 42       | 022066      | 022566          | 022566          | S             | 3265-80                                                                                        | 15?       |
| "     | "   | "   | C-NWSE   | " 2        | "           | OW          | SK        | 2587                  | -----         | ---           | ---           | 100      | 080567      | 082167          | 082167          | S             | 3296-05                                                                                        | 9?        |
| "     | "   | "   | C-SESE   | " 3        | "           | OW          | SK        | 2645                  | -----         | ---           | ---           | 35       | 111067      | 121967          | 121967          | S             | 3364-68                                                                                        | 4?        |
| "     | "   | "   | C-SENE   | " 4        | "           | OW          | SK        | 2579                  | -----         | ---           | ---           | 35       | 111667      | 121967          | 121967          | S             | 3280-90                                                                                        | 10?       |
| "     | "   | "   | C-SESW   | Osburn 2   | Hewit       | DA          | SK        | 2635                  | 3336          | ---           | -701          | -        | 030168      | 030668          | 030668          | -             |                                                                                                |           |
| 35    | 1   | 27  | C-NWSW   | Thomas B-1 | Farmer      | OW          | SK        | 2610                  | 3336          | ---           | -726          | 2.5      | 022368      | 031868          | 031868          | S             | 3343-46                                                                                        | 3         |

| S E C | T R W | LEGAL | WELL     | OPERATOR    | S T A T U S  | ELEV OF KB IN FT *EST | " B D R I L L H K | " B T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY L ZONE(S) (IN FT) |    |
|-------|-------|-------|----------|-------------|--------------|-----------------------|-------------------|---------------|------------|-------------|-----------------|-----------------|---------------|--------------------------------------------------------------------------------------------------|----|
| 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. et al. | 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. et al. | DA WC 2566            | 3386              | 26            | -820       | -           | 090768          | 091368          | -             |                                                                                                  |    |
| 19    | 1     | 28    | C-NESW   | Musgrave 1  | Hick. et al. | 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          | -             |                                                                                                  |    |

| S E C | T R N W | LEGAL    | WELL         | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|---------|----------|--------------|--------------|-------------|-----------|-----------------------|-----------------|-----------------|------------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 1     | 1 29    | C-SWSW   | Deitcher 1   | Simons & S.  | DA          | WC        | 2715                  | 3575            | 24              | -860       | -           | 020566          | 021266          | -             |                                                                                                |
| 6     | 1 29    | C-NWSE   | Geibslar 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-NWNESE | 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    | Savage       | DA          | WC        | 2706                  | ---             | ---             | ---        | -           | 061862          | 062662          | -             |                                                                                                |
| 27    | 1 29    | SESE     | Messinger 1  | IONEB        | DA          | WC        | 2698                  | ---             | ---             | ---        | -           | 102567          | 110867          | -             |                                                                                                |
| "     | "       | C-SESENE | Randel 1     | Betts et al. | DA          | WC        | 2710                  | ---             | ---             | ---        | -           | 091254          | 092454          | -             |                                                                                                |
| 32    | 1 29    | SESE     | Berndt 1     | Producers    | DA          | WC        | 2694                  | 3694            | 26              | 1000       | -           | 050166          | 081566          | -             |                                                                                                |
| 33    | 1 29    | C-SENE   | " 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                                                                                        |
| 34    | 1 29    | C-NWNW   | Messinger 1  | Savage       | 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-SENE   | 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          | -             |                                                                                                |

| S E C | T R W | LEGAL | WELL   | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " D E P T H | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|-------------|-------------|-----------|-----------------------|-----------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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-SESW | 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-SESW | 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          | -             |                                                                                                |           |

| S E C | T R W | LEGAL | WELL   | OPERATOR     | S T A T U S  | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L | " B D E P T H | " B T H I C K | " B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|--------------|--------------|-----------|-----------------------|---------------|---------------|---------------|-----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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 et al. | 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         |

| S E C | T R W | LEGAL | WELL   | OPERATOR     | S T A T U S | F I E L D   | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |                 |    |
|-------|-------|-------|--------|--------------|-------------|-------------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|-----------------|----|
| 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 et al. | 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 et al. | 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 |

| S E C | T R N W | LEGAL | WELL   | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L H | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L       |    |
|-------|---------|-------|--------|-------------|-------------|-----------|-----------------------|-------------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------------|----|
| 30    | 2       | 26    | C-SWSE | Kilzer 2    | Burch       | OW        | SS                    | 2565              | 3291            | 28       | -726        | 55              | 050762          | 061662        | S                                                                                              | 3292-04         | 12 |
| "     | "       | "     | C-NESE | "           | "           | OW        | SC                    | 2548              | 3283            | 28       | -735        | 65              | 081162          | 091262        | S                                                                                              | 3284-96         | 12 |
| "     | "       | "     | C-NWSE | "           | "           | AP        | SS                    | 2564              | 3294            | 28       | -730        | 85              | 081962          | 091262        | S                                                                                              | 3296-08         | 12 |
| "     | "       | "     | C-SWNE | "           | "           | AP        | SC                    | 2566              | 3299            | 25       | -733        | 120             | 091762          | 100362        | S                                                                                              | 3300-10         | 10 |
| "     | "       | "     | C-SENE | "           | "           | TA        | SS                    | 2591              | 3324            | 32       | -733        | 95              | 092662          | 101162        | S                                                                                              | 3324-38         | 14 |
| "     | "       | "     | C-NENW | "           | "           | IA        | SS                    | 2597              | 3332            | 26       | -735        | 76              | 100762          | 102962        | S                                                                                              | 3340-46         | 6  |
| "     | "       | "     | C-NWNE | "           | "           | OW        | SC                    | 2552              | 3288            | --       | -736        | 90              | 101862          | 110262        | S                                                                                              | 3289-99         | 10 |
| "     | "       | "     | SENE   | "           | " & Morris  | IA        | SC                    | 2577              | 3304            | 27       | -727        | 118             | 050163          | 051263        | S                                                                                              | 3304-18         | 14 |
| "     | "       | "     | C-NENE | "           | "           | AP        | SC                    | 2594              | 3326            | 26       | -732        | 60              | 052063          | 052863        | S                                                                                              | 3326-41         | 15 |
| "     | "       | "     | C-SWNW | "           | "           | AP        | SC                    | 2559              | 3289            | 22       | -730        | 70              | 052863          | 060563        | S                                                                                              | 3289-01         | 12 |
| "     | "       | "     | NWNW   | "           | Burch       | WI        | SC                    | 2578              | 3316            | 28       | -738        | -               | 060663          | 062463        | S                                                                                              | 3317-33 (Water) | 16 |
| "     | "       | "     | C-NWSW | "           | " & Morris  | OW        | SC                    | 2542              | 3271            | 26       | -729        | 120             | 033163          | 040763        | S                                                                                              | 3271-85         | 14 |
| "     | "       | "     | C-SWSW | "           | "           | OW        | SC                    | 2551              | 3274            | 26       | -723        | 120             | 040863          | 041563        | S                                                                                              | 3274-88         | 14 |
| "     | "       | "     | NESW   | "           | Walker      | IA        | SS                    | 2587              | 3313            | 27       | -726        | 43              | 113062          | 120662        | S                                                                                              | 3314-29         | 15 |
| "     | "       | "     | C-SESW | "           | "           | 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 | "           | Walker      | OW        | SC                    | 2539              | 3269            | 26       | -730        | 129             | 072562          | 081662        | S                                                                                              | 3269-83         | 14 |
| "     | "       | "     | C-SWSE | "           | "           | OW        | SC                    | 2536              | 3259            | 27       | -723        | 87              | 102662          | 112562        | S                                                                                              | 3260-74         | 14 |
| "     | "       | "     | C-NWSE | "           | "           | DA        | SC                    | 2537              | 3265            | 25       | -728        | -               | 020363          | 021263        | -                                                                                              |                 |    |
| "     | "       | "     | C-SESW | "           | "           | OW        | SC                    | 2539              | 3266            | 23       | -727        | 56              | 051363          | 060763        | S                                                                                              | 3268-81         | 13 |
| "     | "       | "     | C-SENE | "           | "           | OW        | SC                    | 2566              | 3296            | 25       | -730        | 53              | 091563          | 101663        | S                                                                                              | 3296-03         | 7  |
| "     | "       | "     | NESW   | "           | "           | OW        | SC                    | 2550              | 3278            | 27       | -728        | 16              | 120663          | 121263        | S                                                                                              | 3277-93         | 16 |
| "     | "       | "     | C-NWNE | "           | 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   | "           | Burch       | AP        | SC                    | 2550              | 3284            | 25       | -734        | 82              | 010364          | 011774        | S                                                                                              | 3286-98         | 12 |
| "     | "       | "     | C-NWSW | "           | 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  |

| S E C | T R W | LEGAL | WELL   | OPERATOR      | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L H | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|---------------|-------------|-----------|-----------------------|-----------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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     | -----                 | -----           | ---           | -----    | 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             |                                                                                                |           |

| S E C | T R N W | LEGAL | WELL   | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|---------|-------|--------|--------------|-------------|-----------|-----------------------|-----------------|-----------------|------------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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                                                                                              |

| S E C | T R W | LEGAL | WELL   | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|-------|--------|-------------|-------------|-----------|-----------------------|-----------------|-----------------|------------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 3     | 2     | 27    | C-SESW | 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                                                                                           |
| "     | "     | "     | 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             |                                                                                                |
| "     | "     | "     | SESW   | " 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                                                                                           |
| "     | "     | "     | 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                                                                                           |
| 5     | 2     | 27    | C-SWNE | Quigley 1   | Champlin    | OW WC     | 2535                  | 3252            | 23              | -717       | 20          | 011061          | 050472          | S             | 3252½-56½                                                                                      |
| "     | "     | "     | NWNE   | " 2         | St. & S.C.  | DA SE     | 2510                  | -----           | ---             | -----      | -           | 112172          | 113072          | -             |                                                                                                |
| 6     | 2     | 27    | NWSE   | Hall 1      | Kirk et al. | 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          | -             |                                                                                                |
| "     | "     | "     | SESW   | " 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                                                                                        |
| "     | "     | "     | C-SESE | Flaherty 1  | "           | DA SH     | 2573                  | 3291            | 24              | -718       | -           | 081763          | 082463          | -             |                                                                                                |

| S E C | T R W | LEGAL | WELL   | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST L | " B D R I L L | " B T H I C K | " B " ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY IN ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|--------------|-------------|-----------|-------------------------|---------------|---------------|------------|-------------|-----------------|-----------------|---------------|---------------------------------------------------------------------------------------------------|-----------|
| 9     | 2     | 27    | C-SEW  | 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 et al. | 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             | 3285½-95½                                                                                         | 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             |                                                                                                   |           |
| "     | "     | "     | SEW    | " 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             |                                                                                                   |           |

| S E C | T R W | LEGAL | WELL   | OPERATOR      | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|-------|--------|---------------|-------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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                                                                                    |
| "     | "     | "     | 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                                                                                        |
| "     | "     | "     | 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                                                                                        |
| "     | "     | "     | 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                                                                                        |
| "     | "     | "     | C-SWNW | " 9           | "           | OW SC     | 2547                  | 3271            | 25              | -724     | 140         | 080664          | 081764          | S             | 3272-84                                                                                        |
| "     | "     | "     | C-NWNE | Hardesty 1    | Pl. V. & B. | OW SC     | 2558                  | 3290            | 25              | -732     | 75          | 030264          | 031664          | S             | 3291-01                                                                                        |
| "     | "     | "     | C-NENW | " B-1         | "           | OW SC     | 2560                  | 3279            | 25              | -719     | 75          | 050664          | 052064          | S             | 3282-90                                                                                        |
| "     | "     | "     | C-SENW | " C-1         | "           | OW SC     | 2573                  | 3289            | 26              | -716     | 75          | 060664          | 062364          | S             | 3290-00                                                                                        |
| "     | "     | "     | SWNE   | " D-1         | "           | OW SC     | 2567                  | 3299            | 24              | -732     | 80          | 073064          | 082464          | S             | 3300-10                                                                                        |

| S E C | T R N W | LEGAL | WELL   | OPERATOR      | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|---------|-------|--------|---------------|-------------|-----------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 13    | 2       | 27    | NESW   | Hardesty E-1  | OW          | SC        | 2610                  | 3336          | 25            | -726     | 50          | 022274          | 030273          | S             | 3344-48                                                                                        | 4         |
| "     | "       | "     | C-SWSW | " 1           | 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       | DA          | SC        | 2611                  | 3342          | 24            | -731     | -           | 081464          | 082264          | -             |                                                                                                |           |
| "     | "       | "     | C-SESE | " 1           | 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           | DA          | SC        | 2577                  | -----         | ---           | -----    | -           | 083076          | 090376          | -             |                                                                                                |           |
| "     | "       | "     | C-NENE | " 3           | 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           | DA          | SC        | 2582                  | 3311          | 27            | -729     | -           | 071061          | 071561          | -             |                                                                                                |           |
| "     | "       | "     | C-NWSE | " 1           | DA          | SC        | -----                 | -----         | ---           | -----    | -           | 102175          | 103175          | -             |                                                                                                |           |
| 14    | 2       | 27    | C-NWNW | Dutton 3      | 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           | 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   | 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       | DA          | WC        | 2609                  | 3346          | 25            | -737     | -           | 051169          | 051969          | -             |                                                                                                |           |
| "     | "       | "     | NWNE   | Ramesberger 1 | 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       | DA          | WC        | 2622                  | 3374          | 23            | -752     | -           | 061871          | 062971          | -             |                                                                                                |           |
| 20    | 2       | 27    | C-SWSW | Weaver 1      | DA          | WC        | 2696                  | 3437          | 23            | -741     | -           | 122360          | 010261          | -             |                                                                                                |           |
| 21    | 2       | 27    | NWNW   | Townley 1     | DA          | WC        | 2521                  | 3260          | 25            | -739     | -           | 041761          | 042561          | -             |                                                                                                |           |
| 22    | 2       | 27    | NESE   | Quadrator 1   | DA          | SC        | 2661                  | 3380          | 27            | -719     | -           | 121568          | 122468          | -             |                                                                                                |           |

| S E C | T R N W | LEGAL | WELL   | OPERATOR      | S T A T U S   | F I E L D   | ELEV OF KB IN FT *EST | " B D R I L L | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |                 |    |
|-------|---------|-------|--------|---------------|---------------|-------------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|-----------------|----|
| 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                                                                                         | -         |                 |    |

| S E C | T R W | LEGAL    | WELL          | OPERATOR     | S T A T U S | ELEV OF KB IN FT *EST | "B" D R I L L | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|----------|---------------|--------------|-------------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 24    | 2     | C-SENE   | Quador 1      | Indigo & D.  | DA SC       | 2634                  | 3365          | 21            | -731     | -           | 022774          | 030774          | -             |                                                                                                |           |
| 25    | 2     | C-NENW   | Fischer 1     | Bentex       | AP WC       | 2627                  | 3360          | 23            | -733     | 126         | 061261          | 062061          | S             | 3363-72                                                                                        | 9         |
| "     | "     | SENE     | " 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-SESE   | " 2           | "            | OW SC       | 2579                  | 3312          | 24            | -733     | 20          | 021273          | 021873          | M             | 3320-24                                                                                        | 4         |
| "     | "     | C-NWNW   | Quador 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     | 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   | Nicolson 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     | C-NWSW   | Quador 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     | C-SENE   | Helm 1        | Monahan      | DA WC       | 2644                  | 3381          | 24            | -737     | -           | 052965          | 060465          | -             |                                                                                                |           |
| 31    | 2     | 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          | -             |                                                                                                |           |

| S E C | T R W | LEGAL | WELL   | OPERATOR      | S T A T U S   | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |         |
|-------|-------|-------|--------|---------------|---------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|---------|
| 32    | 2     | 27    | C-NESE | Brause 1      | McLish et al. | DA        | WC                    | 2556            | 3290            | 24       | -734        | -               | 043062          | 050762        | -                                                                                              |         |
| 34    | 2     | 27    | C-NESE | Breach 1      | Burch et al.  | OW        | MR                    | 2616            | 3336            | 27       | -720        | 100             | 070864          | 072864        | S                                                                                              | 3338-50 |
| "     | "     | "     | C-SESE | " B-1         | Pl. V. & B.   | OW        | MR                    | 2589            | 3307            | 25       | -718        | 70              | 091864          | 101864        | S                                                                                              | 3310-20 |
| "     | "     | "     | C-SWSE | " C-1         | "             | OW        | MR                    | 2600            | 3318            | 24       | -718        | 60              | 112764          | 012965        | S                                                                                              | 3321-39 |
| "     | "     | "     | 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 |
| "     | "     | "     | C-SWSW | " 2           | "             | OW        | MR                    | 2567            | 3288            | 26       | -721        | 40              | 010575          | 011675        | S                                                                                              | 3296-00 |
| 35    | 2     | 27    | SWSW   | Allen 1       | Taylor        | OW        | MR                    | 2575            | 3294            | 26       | -719        | 55              | 121270          | 010971        | S                                                                                              | 3294-04 |
| "     | "     | "     | C-SESW | Dutton 1      | Burch et al.  | OW        | WC                    | 2580            | 3300            | 27       | -720        | 53              | 052562          | 062962        | S                                                                                              | 3302-14 |
| "     | "     | "     | C-SWNW | McKillip 1    | Walker        | OW        | MR                    | 2600            | 3322            | 26       | -722        | 36              | 120862          | 011263        | S                                                                                              | 3324-38 |
| "     | "     | "     | C-NESW | Wood B-1      | Burch         | OW        | MR                    | 2589            | 3313            | 26       | -724        | 80              | 112063          | 011064        | S                                                                                              | 3314-28 |
| 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 |
| "     | "     | "     | C-NWNE | " 4           | Burch         | IA        | SC                    | 2575            | 3306            | 25       | -731        | 80              | 022064          | 030564        | S                                                                                              | 3306-18 |
| "     | "     | "     | 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 |
| 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        | -                                                                                              |         |

| S E C | T R W | LEGAL    | WELL          | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|----------|---------------|-------------|-------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 5     | 2 28  | C-SESW   | 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                                                                                        |
| "     | "     | C-NWSW   | " C-3         | Husky       | OW          | AK        | 2585                  | 3266            | 23              | -681     | 6           | 042975          | 052175          | M             | 3268-75                                                                                        |
| "     | "     | 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                                                                                        |
| "     | "     | C-SESW   | " B-1         | "           | OW          | AK        | 2567                  | 3244            | 23              | -677     | 190         | 122059          | 010760          | M             | 3244½-48½                                                                                      |
| "     | "     | C-SENE   | " D-1         | "           | OW          | AK        | 2561                  | 3238            | 23              | -677     | 34          | 033061          | 042761          | M             | 3238-42½                                                                                       |
| "     | "     | 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-NWNW   | 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                                                                                        |
| "     | "     | 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                                                                                        |
| "     | "     | NWNE     | Hofman 2      | Frontier    | OW          | AK        | 2559                  | 3240            | 23              | -681     | 186         | 010960          | 012560          | M             | 3241-48                                                                                        |
| "     | "     | 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-SESW   | " C-1         | "           | OW          | AK        | 2582                  | 3264            | 21              | -682     | 85          | 091560          | 092960          | M             | 3265½-69½                                                                                      |
| "     | "     | C-NENW   | " C-2         | "           | OW          | AK        | 2577                  | 3264            | 18              | -687     | 46          | 101460          | 102660          | S             |                                                                                                |

| S E C | T R W | LEGAL | WELL     | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|----------|-------------|-------------|-----------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 14    | 2     | 28    | NESE     | Hofman F-1  | Frontier    | OW AK     | 2617                  | 3330          | 23            | -713     | 84          | 112063          | 120563          | S             |                                                                                                |           |
| "     | "     | "     | C-NWNESE | 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. et al. | 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         |

| S E C | T R W | LEGAL | WELL     | OPERATOR      | S T A T U S   | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " D E P T H | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|----------|---------------|---------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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   | "             | Frontier      | OW AK     | 2642                  | 3315            | 22              | -673     | 198         | 012960          | 030460          | M             | 3315½-17½/19-22                                                                                | 5         |
| "     | "     | "     | SWSNW    | "             | "             | WI AK     | 2644                  | 3308            | 22              | -664     | -           | 050263          | 051063          | -             |                                                                                                |           |
| "     | "     | "     | C-NENW   | "             | "             | OW AK     | 2619                  | 3285            | 22              | -666     | 153         | 022360          | 031060          | M             | 3292-96                                                                                        | 4         |
| "     | "     | "     | C-SESW   | "             | "             | OW AK     | 2632                  | 3298            | 23              | -666     | 77          | 061560          | 070260          | M             | 3304-05                                                                                        | 1         |
| "     | "     | "     | C-SWNW   | "             | "             | OW AK     | 2646                  | 3311            | 23              | -665     | 200         | 060560          | 061160          | M             | 3319-20                                                                                        | 1         |
| 25    | 2     | 28    | C-NENE   | Goodenberg. 1 | Stoep. et al. | 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             | 3354-55½                                                                                       | 1½        |
| "     | "     | "     | 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             | 3310½-12                                                                                       | 1½        |
| "     | "     | "     | C-NWNE   | " B-2         | "             | OW AK     | 2636                  | 3306            | 26              | -670     | 146         | 100660          | 101960          | M             | 3306½-8½/14-18½                                                                                | 6½        |
| "     | "     | "     | 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             | 3308½-11/16-20                                                                                 | 7½        |
| "     | "     | "     | C-NENW   | McFadden 1    | Stoep. et al. | 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 et al.  | 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          | -             |                                                                                                |           |

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

| S E C | T R W | LEGAL    | WELL        | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L H K | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|----------|-------------|--------------|-------------|-----------|-----------------------|---------------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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 et al. | 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. & Cair.   | DA          | WC        | 2475                  | 3145                | 23              | -670     | -           | 052561          | 053061          | -             |                                                                                                |
| 20    | 3 26  | C-SESW   | Cochran 1   | U.S. Smelt.  | DA          | WC        | 2443                  | 3106                | 26              | -663     | -           | 061066          | 061766          | -             |                                                                                                |
| 21    | 3 26  | C-NWNE   | Seydlitz 1  | Jones et al. | 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 et al. | OW          | BT        | 2500                  | 3180                | 24              | -680     | 40          | 112660          | 121160          | S             |                                                                                                |
| "     | "     | SWNW     | " 2         | Stoep. & G.  | DA          | BT        | 2515                  | 3228                | 24              | -713     | -           | 040670          | 041370          | -             |                                                                                                |

| S E C | T R N W | LEGAL    | WELL         | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L H K | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|---------|----------|--------------|--------------|-------------|-----------|-----------------------|-------------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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. Dril.  | 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      | -           | 1092461         | 100361          | S             |                                                                                                |

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

| S E C | T R N W | LEGAL  | WELL       | OPERATOR  | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L H K | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|---------|--------|------------|-----------|-------------|-----------|-----------------------|-------------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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             |                                                                                                |

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

| S E C | T R W | LEGAL | WELL   | OPERATOR     | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B " D R I L L | " B " T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) | T O T A L |
|-------|-------|-------|--------|--------------|-------------|-----------|-----------------------|-----------------|-----------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|-----------|
| 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             |                                                                                                |           |
| "     | "     | "     | SENE   | " 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 et al. | 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             |                                                                                                |           |

| S E C | T R | LEGAL  | WELL        | OPERATOR | S T A T U S | F I E L D | ELEV<br>OF<br>KB<br>IN<br>FT<br>*EST | " B "<br>D R I L L | " B "<br>D E P T H | " B "<br>T H I C K | "B"<br>ELEV | I P B O P D | SPUD<br>DATE<br>MODYR | COMP<br>DATE<br>MODYR | P R O D M / S | PRODUCING<br>INTERVAL(S) IN<br>THE "B" ZONE<br>(K.B. - DATUM)<br>TOTAL IS THICK-<br>NESS OF PAY<br>ZONE(S) (IN FT) |
|-------|-----|--------|-------------|----------|-------------|-----------|--------------------------------------|--------------------|--------------------|--------------------|-------------|-------------|-----------------------|-----------------------|---------------|--------------------------------------------------------------------------------------------------------------------|
| 34    | 3   | 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   | 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                     |               |                                                                                                                    |

| S E C | T R W | LEGAL | WELL   | OPERATOR      | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R E P T L H | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|-------|--------|---------------|-------------|-----------|-----------------------|-------------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 35    | 3     | 27    | C-NWNE | Fritz A-4     | Midwest     | OW SH     | 2533                  | 3220              | 22            | -687     | 120         | 112660          | 121260          | S             |                                                                                                |
| "     | "     | "     | C-SENE | "             | "           | WI SH     | 2503                  | 3185              | 23            | -682     | 175         | 111360          | 112160          | S             |                                                                                                |
| "     | "     | "     | C-NENE | "             | "           | 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   | "             | "           | OW SH     | 2549                  | -----             | ---           | -----    | 122         | 012561          | 020461          | S             |                                                                                                |
| "     | "     | "     | C-NESW | "             | "           | OW SH     | 2563                  | 3242              | 21            | -679     | 300         | 112860          | 120660          | S             |                                                                                                |
| "     | "     | "     | NESW   | "             | "           | OW SH     | 2563                  | -----             | ---           | -----    | 250         | 010261          | 011061          | S             |                                                                                                |
| "     | "     | "     | SESW   | "             | "           | OW SH     | 2542                  | -----             | ---           | -----    | 300         | 111860          | 112960          | S             |                                                                                                |
| "     | "     | "     | SESW   | "             | "           | OW SH     | 2542                  | 3228              | 23            | -686     | 180         | 020361          | 021061          | S             |                                                                                                |
| "     | "     | "     | C-SWSE | "             | "           | OW SH     | 2566                  | 3250              | 21            | -684     | 300         | 100860          | 101960          | S             |                                                                                                |
| "     | "     | "     | SWSE   | "             | "           | OW SH     | 2568                  | -----             | ---           | -----    | 180         | 121760          | 010161          | -             |                                                                                                |
| "     | "     | "     | SWSW   | Harsch 1      | Ohio        | OW SH     | 2501                  | 3188              | 22            | -687     | 161         | 120860          | 121660          | M             |                                                                                                |
| "     | "     | "     | C-NENW | "             | "           | OW SH     | 2575                  | 3265              | 22            | -690     | 167         | 121860          | 122260          | M             |                                                                                                |
| "     | "     | "     | C-SENW | "             | "           | OW SH     | 2568                  | 3259              | 25            | -691     | 75          | 122360          | 022461          | S             |                                                                                                |
| "     | "     | "     | C-NWSW | "             | "           | OW SH     | 2538                  | 3221              | 21            | -683     | 160         | 122660          | 031061          | M             |                                                                                                |
| "     | "     | "     | C-NWNW | "             | "           | OW SH     | 2565                  | 3256              | 21            | -691     | 27          | 123160          | 021761          | M             |                                                                                                |
| "     | "     | "     | C-SWNW | "             | "           | 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   | "             | "           | 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   | "             | "           | WI SH     | 2567                  | 3264              | 22            | -697     | 108         | 091460          | 100560          | S             |                                                                                                |
| "     | "     | "     | C-SENW | "             | "           | WI SH     | 2535                  | 3228              | 20            | -693     | -           | 092260          | 103160          | -             |                                                                                                |
| "     | "     | "     | C-NWSW | "             | "           | WI SH     | 2527                  | 3229              | 21            | -702     | 145         | 100160          | 110260          | S             |                                                                                                |
| "     | "     | "     | SWNW   | "             | "           | OW SH     | 2499                  | 3196              | 22            | -697     | 116         | 120460          | 121660          | S             |                                                                                                |
| "     | "     | "     | NWNW   | "             | "           | OW SH     | 2479                  | 3171              | 24            | -692     | 120         | 121360          | 122360          | S             |                                                                                                |
| "     | "     | "     | SESW   | "             | "           | OW SH     | 2549                  | 3252              | 24            | -703     | 199         | 123160          | 030261          | S             |                                                                                                |

| S E C | T R W | LEGAL  | WELL         | OPERATOR     | S T A T U S | ELEV OF KB IN FT *EST | " B D R I L L H K | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MO/YR | COMP DATE MO/YR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|--------|--------------|--------------|-------------|-----------------------|-------------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 36    | 3 27  | SWNE   | State 8-36   | U.S. Smelt.  | DA SH       | 2531 3219 21          |                   |               | -688     | -           | 050362          | 050862          | -             |                                                                                                |
| "     | "     | C-NWNE | " 1          | Kirk et al.  | 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          | -             |                                                                                                |

| S E C | T R N W | LEGAL  | WELL          | OPERATOR    | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | "B" D R I L L H K | "B" T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|---------|--------|---------------|-------------|-------------|-----------|-----------------------|-------------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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-SENE | Washington 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          | -             |                                                                                                |

| S E C | T R W | LEGAL | WELL     | OPERATOR      | S T A T U S | F I E L D | ELEV OF KB IN FT *EST | " B D R I L L | " B T H I C K | "B" ELEV | I P B O P D | SPUD DATE MODYR | COMP DATE MODYR | P R O D M / S | PRODUCING INTERVAL(S) IN THE "B" ZONE (K.B. - DATUM) TOTAL IS THICKNESS OF PAY ZONE(S) (IN FT) |
|-------|-------|-------|----------|---------------|-------------|-----------|-----------------------|---------------|---------------|----------|-------------|-----------------|-----------------|---------------|------------------------------------------------------------------------------------------------|
| 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    | SENE     | 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          | -             |                                                                                                |

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

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

