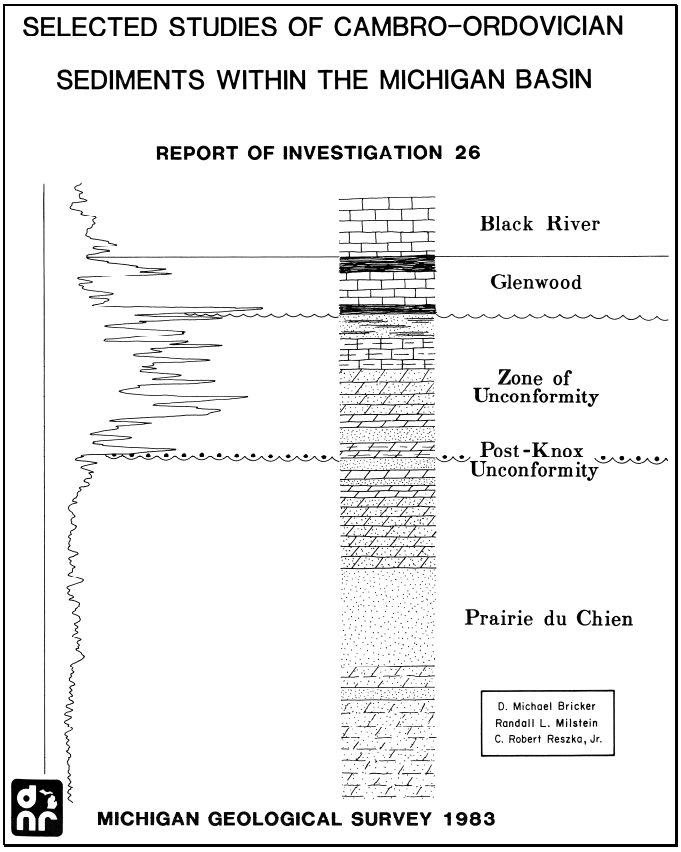

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SELECTED STUDIES OF CAMBRO-ORDOVICIAN SEDIMENTS WITHIN THE MICHIGAN BASIN

Report of Investigation 26

D. Michael Bricker
Randall L. Milstein
C. Robert Reszka, Jr.

Geological Survey Division
Michigan Department of Natural Resources
Lansing, Michigan
1983

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Subsurface and Petroleum Geology Unit
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It shall be the duty of the state geological survey to make or cause to be made, a thorough geological and mineralogical survey of the state, embracing a determination of the succession and arrangement, thickness, and position of all strata and rocks; their mineral character and contents, and their economical uses, ... The investigation of all deposits of brines, coal, marl, clay, gypsum, lime, petroleum, and metals and metallic ores, building stone, marble, gritstone, materials for mortar and cement, mineral paint, and all other productions of the geological world within the limits of this state capable of being converted to the uses of man.

--Act 65 of the public acts of 1869

PART I
Maps, Cross-Sections and Lithology

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Michigan Geological Survey Division
1983

INTRODUCTION

At present, a considerable debate surrounds the definition of Cambrian and Ordovician formation tops as they appear on geophysical well logs within Michigan's Southern Peninsula. This investigation has been prepared as a means to help provide a more complete picture of this stratigraphic sequence.

In no way are the geologic cross-sections or text contained herein intended to be the definitive study on the Cambro-Ordovician sequence in Michigan. Hopefully though, they will act as a reference point from which to expand and inspire more detailed studies and establish a source of information from which other government agencies, industry, educational institutions and private individuals can gain a more thorough data base from which to make future decisions concerning the use of Michigan's subsurface geology.

During the preparation of this report, no attempt was made to carry over outcrop terminology or to correlate outcrop formations with subsurface units. Those formation tops selected are based solely upon data derived from geophysical logs and sample reports. The author has chosen as a foundation for his selections formation tops first ascertained by Garland D. Ells in 1967. The names used to identify these formations are those employed by the Michigan Geological Survey in their investigations of Michigan's subsurface.

A MOOD OF CAUTIOUS OPTIMISM

Since renewed interest in deep well drilling within the Michigan Basin began in 1980, and especially since the announcement of a gas discovery in the Dart Oil and Gas Corporation's, Edwards #7-36 Deeper Pool Test, in April of 1981, the majority of information requests dealt with by the Subsurface and Petroleum Geology Unit of the Michigan Geological Survey have been concerned with the Cambro-Ordovician stratigraphic sequence.

Though many wells have been drilled, and are currently being drilled to Cambrian and Ordovician horizons on the Basin's periphery, prior to the early part of 1980, only eight oil and gas test wells had been drilled to these formations, roughly the 10,000 foot mark, throughout the Basin's central region. For this reason an accurate data base was lacking from which to make reliable assumptions and decisions regarding the disposition of Cambro-Ordovician rock units.

After the successful completion of the Edwards #7-36 well, an upsurge of deep well drilling has occurred in

Michigan's Southern Peninsula. Most of the wells permitted are targeted for the upper regions of the Prairie du Chien Group. Fortunately, from a geologist's point of view, many of the wells continued to venture deeper into what is relatively "unknown territory."

With knowledge of these lower formations being at a minimum and commercial interest in them at a maximum, when a well is drilled to these greater depths, sampling, coring and the running of extensive geophysical log suites have become a matter of necessity. The information gained from these methods has established a viable and, in most cases, accurate data base from which the Geological Survey, the petroleum industry and other independent researchers can begin to draw some conclusions.

The Subsurface and Petroleum Geology Unit, in its dealing with the large number of inquiries concerning the Cambro-Ordovician rock sequence, has found it quite evident that there is a difference of opinion concerning formation identification and nomenclature. Garland D. Ells (1967) addressed this problem of identification as it applies to practical usage, "...in my opinion, the petroleum exploration industry in Michigan generally does not use the sophisticated classifications and nomenclatures which have been developed from time to time for outcrop and subsurface sequences." "...the idea of time-stratigraphic classification is, no doubt, appreciated by most geologists, but the emphasis and interest seems to be mainly on tracing the individual rock units from place to place." The key phrase here is "practical usage."

Countless volumes exist concerning Cambrian and Ordovician rocks within the Michigan Basin. These works reflect the enthusiasm and tireless efforts of biostratigraphers, lithostratigraphers, petroleum geologists and researchers from just about every other branch of the geologic sciences. Unfortunately, a petroleum geologist's solution to an existing correlation problem may bring on a considerable amount of unanswered questions to a biostratigrapher. However, a petroleum geologist cannot detect conodonts from a geophysical well log.

For this reason, the names used to identify the Cambro-Ordovician units in this report are those employed by the Michigan Geological Survey. They have proven themselves effective and reliable in regional studies and in correlation problems involving electric and radiation type well logs. Undoubtedly, a multitude of terms exist covering this sequence. In an attempt to standardize information for future research and for dispersal on a daily basis to the general public, I have chosen those terms which have prevailed as the most practical.

In the construction of the accompanying geologic cross-sections and maps, formation boundaries were based on sample descriptions in combination with correlatable geophysical log curves. Due to the nature of those rocks within the Cambro-Ordovician sequence, sandstones, some minor shales and clean carbonates, geophysical logs do not show all formations as distinct, individual log signatures. However, certain curves and curve patterns are evident. These are correlatable and can be used as reliable, traceable log markers within the Southern Peninsula. The gamma ray curve was used to construct the cross-sections because it shows the most consistently recognizable profiles.

In a given well, the lithologic description was compared to its corresponding geophysical log suite. Individual log suites were then correlated with others throughout the state by a combination of sample descriptions and geophysical log characteristics. Contributing to the difficulty in correlating these units is the often poor quality of submitted sample descriptions. When a two thousand foot interval is described soley as "gray dolomite," problems in accurate interpretation arise. For these reasons the Prairie du Chien and Trempealeau formations have not been broken into their individual components. The pattern for the correlation runs was selected for convenience of presentation and to give what appears to be the most logical and complete coverage of the Southern Peninsula (Fig. 17). Any number of possible combinations can be made from the control points used. The datum for all cross-sections is the Glenwood Shale. It should be noted that the McClure Oil Company, Sparks, Eckelbarger and Whightsil #1-8 well is not drawn to total depth on the cross-sections for reasons of space constraint. The well's actual total depth being 17,466 feet.

The accompanying lithologic descriptions, with the exception of the Prairie du Chien, are the result of combining the major identifying characteristics from drill site sample descriptions, mud logs and existing microscopic analyses. These microscopic analyses were carried out by the Michigan Geological Survey, the petroleum industry and geologists engaged in independent research through academic institutions and federal agencies.

During the preparation of maps for this report additional data points were used for control, beyond those wells used in the geologic cross-sections, to insure a greater measure of accuracy. Even with the additional control points the contouring was open to interpretation. Therefore, the least deceiving contour interval was chosen on a map to map basis.

With the limited data available, structure contour maps prepared for this report seem to indicate the presence of an embryonic basin during Mt. Simon times. Well control is not sufficient at this stage to indicate the presence of a structural basin prior to the Mt. Simon's deposition.

The continued drilling of Cambro-Ordovician test wells within the Michigan Basin will help provide an ongoing supply of fresh data with which to improve the accuracy of our interpretations and understanding of this sequence of rocks. At this time, a mood of cautious optimism prevails surrounding the economic potential of the Cambrian and Ordovician formations. Hopefully, the

practical information presented in this report will inspire and expand the imaginations of researchers and help direct a new flow of energy and excitement into the commercial hydrocarbon potential of Michigan's deeper sediments.

STRATIGRAPHY

ORDOVICIAN

GLENWOOD SHALE

The Glenwood Shale is the basal member of the Black River Group. Due to the appearance of sandstones and carbonates within the unit it has been called a transitional bed between the St. Peter Sandstone and the Black River Limestone. Recent evidence indicates that in most portions of Michigan the Glenwood exists as a stratigraphic unit regardless of the presence of the St. Peter. Apparently, the Glenwood is confined by the massive carbonates of the Black River above and, where it is present, the St. Peter Sandstone below. Where the St. Peter is absent, the base of the Glenwood is marked by an unconformity. The Glenwood is a waxy, green to greenish gray, pyritic and sandy shale. It is interbedded with thin layers of red to dark brown sandy and silty dolomite, dolomitic sandstone and limestone. In most cases there are abundant quartz grains at the shale-dolomite contacts.

The Glenwood Shale ranges in thickness from under 5 feet to over 50 feet in the north central Lower Peninsula (Fig. 2).

ST. PETER SANDSTONE

The St. Peter is a friable sandstone composed of well sorted subrounded to well rounded quartz. The Unit is thus termed supermature. The grains are frosted and pitted, fine grained in the upper portion and coarse grained in the lower section of the formation. Often the presence of chert and calcareous cementing is noted.

The St. Peter lies below the base of the Glenwood Shale and above an unconformity at the top of the Prairie du Chien Group. It is present only in southwestern Michigan (Fig. 3), and its thickness varies from over 30 feet in wells drilled in Calhoun County to being locally present or absent over very short distances in Kalamazoo, Van Buren, Cass, St. Joseph and Berrien Counties (Fig. 4).

In other regions of the Southern Peninsula, and located in a position apparently stratigraphically equivalent to the St. Peter Sandstone, there exists a similar quartz sandstone unit. Comparative analysis of sample records filed with the Michigan Geological Survey indicate that this unit appears to be a zone of reworked and redeposited sediments derived from the older massive sandstone facies of the Prairie du Chien Group. Though only thorough thin section and core analysis can confirm this, several factors lead the author to believe this stratigraphic equivalent is distinct from the St. Peter Sandstone.

The reworked unit is a clean, very fine to medium grained, well sorted, translucent quartz sandstone. Its grains are subangular to subrounded, showing heavy mottling in many cases. The unit tends to be moderately argillaceous. The unit is very dense and descriptions identify silica, calcite or finely crystalline dolomitic cementation. Color varies from white to light gray to yellow, and in the presence of dolomitic cement, brown to dark brown. Occasionally traces of pyrite appear. Although the grains appear to have been exposed to weathering processes, they do not exhibit this characteristic to the same degree as the St. Peter Sandstone. The higher angularity of the quartz grains would indicate a shorter period of exposure to weathering or that they did not experience any long distance transportation.

The sandstone unit, rather then being a separate and distinct body, appears to be one of the upper constituents of a series of reworked sediments including sandy and argillaceous dolomites, limestone, sandstones and minor amounts of shale. These sediments appear to be bounded by an unconformity at the base of the Glenwood Shale and another unconformity at the top of the massive sandstone facies of the Prairie du Chien.

The lower section of this unit of reworked sediments and the positioning of the unconformity below it was derived by using criteria for the recognition of unconformities established by Pettijohn (1949). Using a single criterion from Pettijohn's list to suggest unconformity may only complicate the identification process, as individually almost all the listed criterion can be explained by faulting or some sedimentary process or variation. The more criteria that can be established for a given horizon, the greater is the probability of its being a surface of unconformity. The author has identified the unconformity by observing the following criteria in many of the wells studied: basal black shales, residual chert, buried soil profiles, glauconite zones, iron-oxide zones, sharp differences in lithology, algal biscuits, borings of littoral marine organisms, pyritiferous zones and radioactive mineral zones.

By using a combination of lithologic descriptions and geophysical well logs the unconformity between the Prairie du Chien and the units that overlie it can be identified and correlated. This task is complicated by the nature of the lithologic facies within the Prairie du Chien. In regions where the Prairie du Chien lithology is dominated by carbonates and the St. Peter Sandstone is absent, the unconformity is placed at the base of the Glenwood Shale (See Plate 6 - Mobil Oil Corp., Kelly Unit No. 1). This does not mean that the unconformity may not lie elsewhere within the carbonate unit, only that its recognition and identification within this constant lithology is difficult at best. In southwestern Michigan, where the St. Peter Sandstone is present, the unconformity is placed at the contact between the

carbonates of the Prairie du Chien and the St. Peter (See Plate 5 - Security Oil and Gas Co., Thalman No. 1).

In the north central Lower Peninsula, where the unit of reworked sediments can be identified occupying a stratigraphic position directly below the Glenwood Shale, the unconformity is located at the base of the reworked zone. Directly below this unconformity lies the massive sandstone facies of the Prairie du Chien Group (See Plate 8 - Dome Petroleum Corp., Brandt No. 1-34). It appears the unconformity that separates the Prairie du Chien from the St. Peter Sandstone and Glenwood Shale in most areas of Michigan is the same unconformity which separates the zone of reworked sediments from the Prairie du Chien in the north central region of the Lower Peninsula. I believe this erosional surface correlates to the Post-Knox Unconformity and can be tracked by cross-sections into Michigan from adjacent states.

The unit of reworked sediments located between the unconformity at the base of the Glenwood Shale and the Post-Knox Unconformity at the top of the massive sandstone facies of the Prairie du Chien Group, though in a position stratigraphically equivalent to the St. Peter Sandstone, is a separate lithology and must be treated as a separate unit.

The St. Peter Sandstone appears to be present only in southwestern portions of Michigan, having a southwesterly source (Fig. 3). Available evidence indicates the stratigraphic equivalent sediments are restricted to a northeast-southwest trending tongue like configuration in the north central region of the Southern Peninsula (Fig. 4a).

For identification and correlation purposes in this report and on the accompanying cross-section the stratigraphic interval occupied by these reworked sediments will be referred to as, “The Zone of Unconformity.”

PRAIRIE DU CHIEN

On the basis of outcrop lithologic descriptions the Prairie du Chien Group has been divided into three formations by other workers: in descending stratigraphic order, the Shakopee Dolomite, New Richmond Sandstone and Oneota Dolomite. The extent to which any of these outcrop formations exist in Michigan’s subsurface has yet to be ascertained. For correlation purposes in this report, the group has not been subdivided. Because a more detailed description of the Prairie du Chien, as it appears in Michigan’s subsurface, is located elsewhere in the body of this report (Reszka, 1983), the lithology will not be discussed in depth at this point. In general, the Shakopee is a light gray to light brown finely crystalline dolomite. It contains minor amounts of oolitic chert, sand and shale stringers. The New Richmond is a fine to medium grained quartz sandstone. The grains are subrounded to rounded and often frosted. Color may vary from light gray to pink. The sandstone is often interbedded with silt-stone, argillaceous limestone, dolomite, shale and minor amounts of chert. The Oneota is a fine grained, gray to buff to brown dolomite. Shows of oolitic chert are quite common along with dolomitic shale stringers, sand and glauconite.

The Prairie du Chien appears to be bounded by two unconformities: The Post-Knox Unconformity which separates its upper members from the Glenwood Shale, the St. Peter Sandstone and in north central Lower Michigan, a zone of reworked sediments and another unconformity which established its lower limit at the top of the Trempealeau. This lower unconformity was identified by using the same criteria applied in establishing the position of the Post-Knox Unconformity discussed earlier in this paper.

In the Southern Peninsula of Michigan, the Prairie du Chien appears thickest, over 1300 feet, in a NW-SE trending band from southern Kalkaska County to northwestern Arenac County. There is also a relatively thick tongue of Prairie du Chien sediments extending between Newaygo and Eaton Counties. There appears to be a region stretching from northern St. Clair County to southern Wayne County in which the Prairie du Chien Group is absent (Fig. 6). In this region the Glenwood Shale lies directly on top of the Trempealeau Formation (See Plate 8 - Marathon Oil Co., Woodhaven B.D. No. 1).

CAMBRIAN

TREMPEALEAU

The Trempealeau Formation consists of three members: the Jordan Sandstone, the Lodi and the St. Lawrence. For the purpose of electric log correlation in this report, and as is common practice with geologists working in the Michigan Basin, the Trempealeau will not be subdivided into its individual members, though all will be described.

In general the Trempealeau consists of a mostly buff to light brown dolomite, often exhibiting a pink mottling. The dolomite may appear fairly sandy, and in regions, slightly cherty. Indications of hematitic dolomite, dolomitic shale, shaly dolomite and glauconite are also common.

The Trempealeau ranges in thickness from under 100 feet along the southeastern periphery of the Basin to nearly 900 feet in north central Lower Michigan (Fig. 8).

The Jordan Sandstone may range from a very fine grained quartz sandstone containing well rounded, frosted and pitted grains to a sandy dolomite. The dolomite may vary in color from white to buff to light brown, and may be fairly calcareous.

The Lodi is a slightly sandy dolomite with a wide variation in color. It may appear white, buff, pink or purple. It is interbedded with very fine grained, poorly sorted sand stringers and shale. The Lodi also contains some minor anhydrite layers and shows traces of pyrite.

The St. Lawrence member is a sandy, very glauconitic dolomite. Its color ranges from light to dark gray. Intermingled within the member are dark colored dolomites and dolomitic shales. These tend to range in

color from dark green to dark gray. All of this is interbedded with anhydrite and a clear to tan colored, fine grained sandstone. Often highly dolomitic algal balls are noted in the St. Lawrence's lower section.

Some workers recognize the existence of an unconformity between the Trempealeau Formation and the top of the Munising Formation (Sorensen, et al, 1964). To avoid confusion with other unconformities being dealt with in this paper, this unconformity has not been identified as such on the geologic cross-sections though it has been represented as a correlation.

FRANCONIAN

The Franconia lies beneath the unconformity at the base of the Trempealeau, and is the upper member of the Munising Formation. It is a faintly pink to gray, fine grained, angular quartz sandstone. There appears interbedded with the sandstone, beds of gray to tan dolomite, shaly dolomite, finely crystalline sandy dolomite, dolomitic siltstone and green gray shale. The Franconia contains pyrite and a very significant amount of glauconite.

Of the wells used in this report, 38 cut the Franconia. Sixty-eight percent of these wells had a thickness ranging between 110 feet and 170 feet, and this remains quite constant basinwide. There is a marked increase in thickness, however, in the north central region of the Southern Peninsula, where the member reaches a thickness of over 500 feet (Fig. 10).

The Franconia usually can be identified on the gamma ray log as the radiation intensifies below the Trempealeau Formation. The exception is where the bottom of the Trempealeau is laced with sandy stringers.

DRESBACH

Below the Franconia member is the Dresbach. The upper region of the Dresbach is a white to light gray dolomitic sandstone. This consists of subangular, medium sized grains, and contains minor amounts of glauconite. The lower region is a well sorted, coarse grained quartz sandstone that exhibits well rounded, frosted, and pitted grains. This sandstone often contains thin beds of white dolomite and minor amounts of gray green shale.

The Dresbach reaches a thickness of nearly 600 feet in the Gladwin County area and thins to less than 100 feet in the southeastern and western portions of the Lower Peninsula (Fig. 12).

EAU CLAIRE

The Eau Claire is a thinly bedded member containing dolomite, sandstone and shale. The dolomite often appears sandy or shaly, and has a variety of coloration: gray to dark gray, pink, purple, red, green and brown. The sandstone is well sorted and held together with a light tan dolomitic cement. The shale varies in color with the same degree as the dolomite. Within the Eau Claire it is also common to find fossil fragments, thin beds of muscovite, and a regional abundance of glauconite. On the gamma ray log the Eau Claire characteristically begins as the radioactivity increases, in sharp contrast to the low gamma ray response of the relatively clean Dresbach sandstone above it.

The Eau Claire reaches a thickness of over 800 feet near the central basin and thins to 150 feet in locations along the state's eastern margin (Fig. 14).

MT. SIMON SANDSTONE

The Mt. Simon Sandstone is the lowest member of the Munising Formation. It is a medium to coarse grained, silica cemented sandstone, displaying sub-angular to rounded grains and moderate sorting. Its upper region is white to gray in color and shows slight amounts of shale and sandy dolomite. The basal segment becomes slightly arkosic and exhibits an increase in feldspar and hematite causing a light pink coloration.

In the southwestern portions of the state the arkosic nature of the Lower Mt. Simon is very evident. The presence of feldspar in this lower section may have resulted from the reworking of the granite wash sediments which underlie an unconformity at the base of the Mt. Simon in many areas of the state. The Mt. Simon reaches a thickness of 1,240 feet in the Gratiot County region and rapidly thins to zero in Livingston County where a granite wash lies directly below the Eau Claire. It also thins as it passes through the Allegan County area, thickening again in Berrien County in the direction of the Illinois Basin.

In this report, the base of the Mt. Simon has been placed at the beginning of this "Granite Wash", or the point at which the gamma ray curve radiation intensity increases dramatically as the well bore enters what is believed to be Precambrian age rock.

PART II
Description of the Prairie du Chien Group Through Microscopic Analysis of Samples

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1983

DESCRIPTION OF THE PRAIRIE DU CHIEN GROUP THROUGH MICROSCOPIC ANALYSIS OF SAMPLES

In order to minimize the masking effect of extremely local lithologic variations on gross lithologic trends, five widely spaced wells were used in this study in an attempt to determine major rock characteristics of the Prairie du Chien Group. The information provided is necessarily very limited but it does indicate a facies change between some of the wells. The following wells were used in the study:

1. George P. Dorr #1, P.N. 35153, Texaco Inc., Grass Lake Twp., Jackson Co.
2. Weingartz #1-7, P.N. 34611, JEM Petroleum Corp., Aetna Twp., Clare Co.
3. Visser et al #3-35, P.N. 34606, JEM Petroleum Corp., Aetna Twp., Clare Co.
4. State-Mitchell #1-31, P.N. 34936, Gulf Oil Exploration and Production Co., Mitchell Twp., Alcona Co.
5. Sailing-Hanson Co. Tr. #1, P.N. 35060, Sun Exploration and Production Co., Ellis Twp., Cheboygan Co.

The description for all the wells can be very lengthy. As a result I will provide what I believe is a typical description of the Prairie du Chien Group. The descriptions were made from examination of samples by binocular microscope. As an aid in determining lithologic tops, geophysical logs concerning the above wells were used, in conjunction with a study of Prairie du Chien stratigraphy conducted by D. M. Bricker and R. L. Milstein which covered the entire state.

In general the Prairie du Chien is composed of three minerals: quartz, which dominates, dolomite, almost equally important, and shale which is a distant third. Limestone can sometimes make an appearance but it is in minor quantities. Accessory mineralization found in the above wells were: pyrite, hematite staining, anhydrite (possibly cavings), glauconite and what are probably feldspars. All were in trace quantities but may be used as markers to identify Prairie du Chien rocks because they were not found in either the Glenwood or Trempealeau.

As a whole the Prairie du Chien appears lighter in color when compared to the bracketing formations, the Glenwood and Trempealeau. The St. Peter, which directly overlies the Prairie du Chien only in the southwest corner of Michigan, is similar in color to the Prairie du Chien but the lithology description is distinct. The Prairie du Chien is generally light gray to buff with occasional minor streaks of darker color. This can be somewhat difficult to determine with a microscope, but if the samples are examined with the unaided eye the color differences are readily apparent.

In the wells studied, with the exception of the Dorr #1, quartz is the most abundant mineral in the Prairie du Chien. It is generally light colored, ranging from clear to white, light gray to buff and yellow to pink. It can be fine to coarse grained, angular to rounded, frosted, single grained to aggregates with both siliceous and carbonaceous cement, and poorly to well sorted. Generally the quartz is poorly sorted which usually will cause a resulting poor porosity in regions where quartz is the major constituent, as in portions of the Prairie du Chien which some workers have informally referred to as the “Massive Sand.”

Dolomite can also be present in major quantities as in the Dorr #1 well. It is usually dark to light gray and dark to light brown with the lighter colors predominating. It is usually fine grained to microcrystalline and can be sucrosic especially near the bottom of the Prairie du Chien. It is usually massive and blocky and may be sandy in part.

Shale is present in minor amounts throughout the Prairie du Chien. It is generally black to very dark brown, platy to blocky, and may be dense or fissile and can also be sandy. Some red and some green shale was also found.

The above descriptions are not intended to be vague although they may appear to be. The paleoenvironment that existed during Prairie du Chien time must have been fairly constant throughout the period of deposition. However, there were enough changes climatically and regionally to cause confusion. It is not the scope of this study to determine these paleoenvironmental changes but to try to determine the lithology of the Prairie du Chien and what characteristics may differentiate it from other stratigraphic intervals.

It appears the determinative factors are the presence of quartz and dolomite. In the south, in the Dorr #1, dolomite is the predominant mineral with quartz present, but in a minor role. In the northerly wells, (Weingartz, Visser and Sailing-Hanson) quartz by far dominates the lithology, but dolomite is still present. In the east well, the State-Mitchell, quartz still dominates but calcite is Very evident even to the extent of forming a coating over the quartz. (These facies changes are marked and can be cause for misinterpreting the stratigraphy. Since the scope of this work is limited, no firm statement can be made concerning the extent or magnitude of these changes.)

In the wells studied, the Glenwood is predominantly shale with limestone present in minor amounts. The Trempealeau was clearly defined in only the Sailing-Hanson #1-11. The upper Trempealeau interval was mostly a gray and white mottled dolomite with a trace of quartz, which may have been cavings. This interval covers 75 feet, and then fine grained, gray to white, well sorted, clean quartz was encountered. It appears the near absence of quartz in the top of the Trempealeau signals the change in stratigraphy that coincides with the lithology boundary determinations made on the geophysical logs for the above well.

Throughout the Prairie du Chien, in the wells studied, the ratio of constituents may change but the lithologies remain constant. There is always some quartz and dolomite of the varieties described above. Whether or not the Prairie du Chien can be accurately delineated consistently by using only samples is problematical. Further study is indicated but I believe that both samples and geophysical logs, used in conjunction, will be able to accurately determine the Prairie du Chien limits.

PART III
Hydrocarbon Production from the Prairie du Chien Group

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1983

HYDROCARBON PRODUCTION FROM THE PRAIRIE DU CHIEN GROUP

INTRODUCTION

The discovery of commercial quantities of natural gas in Prairie du Chien Group rocks in a well drilled in Missaukee County in 1981 created considerable interest in exploring the Lower Ordovician section of Michigan's stratigraphic column for hydrocarbons. Although most of the numerous wells drilled as a result of this recent interest were completed as dry holes, a great deal of new geological information has been gained which will be of value to future oil and gas exploration programs.

PRODUCTION HISTORY

Oil and gas production from the Prairie du Chien Group is not a new phenomenon. At the time of this writing, according to Michigan Geological Survey records, Prairie du Chien hydrocarbon production has been established over the years in six wells at scattered locations throughout the state. The locations of these six wells are shown in Figure 1; well data summaries are shown in Table 1. Additionally, shows of hydrocarbons in the Prairie du Chien have been reported in three wells drilled in Barry County between 1940 and 1955 as well as in several of the noncommercial wells recently drilled in the central basin of Michigan.

The hydrocarbons found in Prairie du Chien Group rocks have been obtained from two different lithologic types, and can be separated into two provinces in Michigan. Oil production in the southern portion of the Lower Peninsula in wells number 1, 2, and 3 was found in carbonate rocks. Gas and gas condensate production in wells number 4, 5, and 6 in the north central region of the Lower Peninsula is from a sandstone facies of the Prairie du Chien Group.

FIGURE 1. LOCATION OF WELLS WHICH HAVE PRODUCED HYDROCARBONS FROM THE PRAIRIE du CHIEN GROUP.

TABLE 1. WELL DATA SUMMARIES FOR WELLS WHICH HAVE PRODUCED HYDROCARBONS FROM THE PRAIRIE DU CHIEN GROUP

Well Number	County & Location	Operator & Lease	TD (ft)	Depth to Pay (ft)	Pay Lithology	Year of first Production	Year of last Production	Cumulative Production
1.	Jackson 28-4S-3W	Smith Pet. Co. M. Zaremba #1	4,356	4,333	dolomite	1960	1965	10,955 Bbls. Oil
2.	Hillsdale 11-8S-1W	Bell & Gaull Drlg. H. Young #1	3,729	3,441	dolomite	1960	1965	7,842 Bbls. Oil
3.	Lenawee 36-5S-3E	N.R.M. Pet. Selders #1-36	4,220	3,980	dolomite	1982	1982	304 Bbls. Oil
4.	Missaukee 36-22N-7W	Dart Oil & Gas Edwards #7-36	10,810	10,548	sandstone	1982	-	800,982 Mcf Gas
5.	Missaukee 25-22N-7W	Patrick Pet. Gilde #1-25	10,802	10,560	sandstone	1982	-	379,510 Mcf Gas
6.	Otsego 16-30N-1W	Wainoco Oil & Gas Johannesburg #3-16	8,710	7,839	sandstone	1982	-	757 Bbls. Cond. +27,975 Mcf Gas

All production attained to date has been located immediately below an unconformity at the top of the Prairie du Chien Group. This widespread erosional surface correlates with the Post-Knox Unconformity (Syrjamaki, 1977) of other states (Fig. 2).

Utilizing geophysical logs and lithologic descriptions, correlation of this unconformity in Michigan is relatively straightforward in certain areas and very difficult in others. Where the St. Peter can be readily identified in southwestern Michigan, the Post-Knox Unconformity is placed at the base of this sandstone body. Prairie du Chien carbonates lie directly below this point. In the north central Lower Peninsula a reworked section of Prairie du Chien Group rocks composed of sandstones and carbonates lies below the base of the Glenwood, occupying a position which is believed to be stratigraphically equivalent to the St. Peter Sandstone.

In areas where these reworked sediments can be recognized, the Post-Knox Unconformity is marked at the base of this reworked interval. The massive sandstone facies of the Prairie du Chien Group occurs beneath the unconformity in this region. Within this sandstone facies, decreasing porosity with depth may indicate past groundwater action, therefore offering evidence for the presence of an unconformity as well as helping to explain, in part, the reason for the occurrence of hydrocarbons in the more porous interval directly below the unconformity.

Where the St. Peter is absent and where the Prairie du Chien is predominately a carbonate, the Post-Knox Unconformity is, for schematic purposes in this paper, arbitrarily placed at the base of the Glenwood. This is due to the difficulty of recognizing the unconformity in the essentially single lithology facies of the Prairie du Chien in these areas.

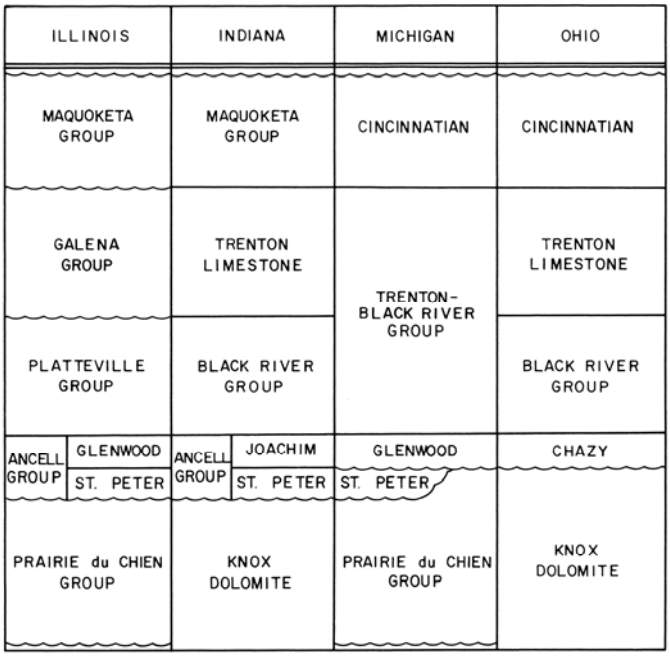

FIGURE 2. GENERALIZED STRATIGRAPHIC CORRELATION CHART FOR ORDOVICIAN ROCKS IN MICHIGAN AND NEARBY STATES.

SOUTHERN MICHIGAN

Production from the three wells in the southern part of Michigan was from zones lying directly below the Post-Knox Unconformity (Fig. 3). These southern Michigan pay zones ranged from 4 to 25 feet in thickness. One well, the H. Young #1, was subsequently deepened, and it is assumed that production was also obtained from these slightly lower treated zones although completion reports are not clear on this point. Crude oil produced from the Young well reportedly had an API gravity of 44.6°; that which was produced from the Selders well had an API gravity of 47.0°.

NORTH CENTRAL MICHIGAN

The three north central Michigan wells produce natural gas, and in the case of the Johannesburg Manufacturing well (well number 6, Table 1) some additional quantities of gas condensate, from the uppermost part of the massive sandstone facies in the Prairie du Chien Group. Like the wells in southern Michigan, the pay zones are located just below the Post-Knox Unconformity (Fig. 4). To date, hydrocarbon production obtained in the north central region has been limited to selected intervals within the top 150 feet of the sandstone. The thickness of this sand body is in excess of 1,000 feet in certain areas of the north central basin. As this sandstone unit is traced southward it thins and undergoes a facies change until it is represented by a carbonate over approximately the southern one third of the state's Lower Peninsula.

TRAPPING MECHANISMS

Trapping mechanisms for Prairie du Chien hydrocarbons may take a variety of forms. Based upon their on-trend location in relation to the fault related Albion-Scipio oil field, it appears likely that oil production from the Zaremba and Young wells (wells number 2 and 3, Table 1) was also linked to porosity development associated with faulting. The reservoir found in the Edwards and Gilde wells in Missaukee County's Falmouth oil and gas field is thought to be connected, in part, with a structural closure. Since the Falmouth field already had exhibited structurally associated production from four shallower geological horizons, evidence has now been provided to support the suggestion that some shallow structures in the Michigan Basin may be persistant with depth. Some workers (Ells, 1969, Hinze et al, 1971) have alluded to basement lithologic or tectonic features as being originating factors for the roughly superimposed structures in parts of the basin. Due to the paucity of nearby well control and geological data, it is not prudent at this time to speculate as to possible trapping mechanisms for the reservoirs in Lenawee and Otsego Counties. The potential for hydrocarbon entrapment of a stratigraphic nature may exist in Prairie du Chien sandstone units if porosity and permeability abruptly decrease as the lithology of the units alters from sandstone to carbonate coming updip out of the basin.

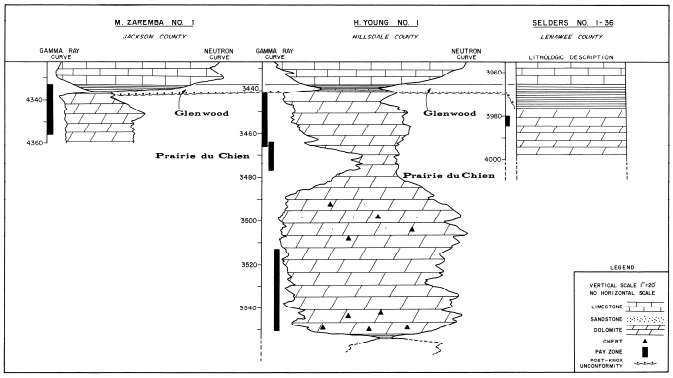

FIGURE 3. STRATIGRAPHIC SECTION (SOUTHERN MICHIGAN) SHOWING PRODUCTIVE ZONES AND DOMINANT LITHOLOGY IN THE LOWER ORDOVICIAN.

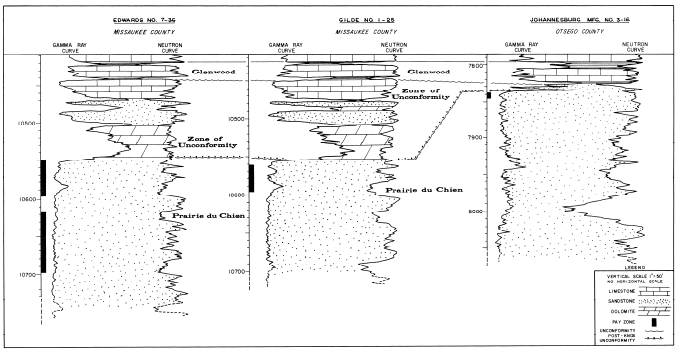

FIGURE 4. STRATIGRAPHIC SECTION (NORTH CENTRAL MICHIGAN) SHOWING PRODUCTIVE ZONES AND DOMINANT LITHOLOGY IN THE LOWER ORDOVICIAN.

CONCLUSIONS

Prairie du Chien rocks have not thus far yielded large amounts of hydrocarbons in comparison to other producing formations in Michigan. However, that production has been obtained at all is significant because it indicates the potential for additional production from this stratigraphic interval. At this time, it appears that future production from the Prairie du Chien Group will be from both structural and stratigraphic type traps where favorable porosity and permeability development exists, and will likely be closely associated with the Post-Knox Unconformity.

PART IV
Oil and Gas Test Well Inventory: Prairie du Chien and Deeper

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Subsurface and Petroleum Geology Unit
Michigan Geological Survey Division
1983

LIST OF WELLS - PRAIRIE DU CHIEN AND DEEPER

The following document lists all oil and gas test wells in Michigan that penetrate the Prairie du Chien. It includes:

map number
permit number
farm name
company name
location by county
township, range and section
formation at total depth
Prairie du Chien top
Prairie du Chien base
total depth of the well
elevation

The list is arranged alphabetically by county name then numerically by township and range. It consists of two parts: one comprised of wells spotted on a map, the other consists of those not on the map. Because the map had to be large enough to make the well spots and corresponding numbers easily visible it could not be included in this paper but may be purchased separately. Send your request for purchase to:

Geological Survey Division
Maps and Graphics
Michigan Department of Natural Resources
Box 30028
Lansing, MI 48909

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0186	34931	St Mitchell #1-31	GULF	01 Alco	26N-05E-31	C NE NE	TMPL	9419	10344	10402	986	kb
0074	21865	Noteboom #1	STRAKE & BASIN OIL	03 Algn	02N-11W-18	NE SW NW	PRDC	4255	----	4290	823	kb
0073	31991	Schipper #1-18	MILLER BROS.	03 Algn	02N-11W-18	SW NE NW	PRDC	4309	----	4330	818	kb
0075	23361	Green #1	REPUBLIC	03 Algn	02N-11W-30	S SW SW	PRDC	4199	----	4215	826	kb
0076	23685	Simpson #1	CONTINENTAL	03 Algn	02N-12W-10	NW NE SE	PRDC	4258	----	4320	827	kb
0077	24323	Marshal #1	SMITH, R. C.	03 Algn	02N-12W-24	NW SW SW	PRDC	4202	----	4220	836	kb
0078	21684	Boss #1	STRAKE	03 Algn	02N-12W-25	SE NW NE	PRDC	4214	----	4299	849	kb
0316	35186	Howard Hunt #1	MARTIN PROPERTIES	03 Algn	02N-16W-09	W NW SE	----	-----	----	-----	688	kb
0443	32870	Hoffmaster #1-22	MI OIL CO	03 Algn	03N-12W-22	NE NE SW	PRDC	4312	----	4399	739	kb
0072	21930	Robinson #1	TAGGART	03 Algn	03N-14W-20	NW SE NE	PRDC	3859	----	3880	678	kb
0213	32648	DeHaan #1-29	MICHIGAN OIL CO	03 Algn	04N-11W-29	NE SE SW	PRDC	4630	----	4721	772	kb
0079	25690	Ford Motor # 1-5	PANHANDLE E. PPL.	04 Alpn	31N-09E-05	C SE NE	ECLR	5340	5802	6380	684	?
0080	29571	Sheldon-State Wellington #1-34	SHELL	04 Alpn	32N-05E-34	SW SW SW	PRDC	5921	----	5971	756	kb
0444	2960	Nevins #1	TEATER, CHARLES W	04 Alpn	32N-06E-18	NW NW NE	UNCF	----	----	5665	803	kb
0447	35702	Visser #1-27	SHELL OIL CO	05 Antm	30N-07W-27	SW NE NE	PRDC	7172	----	7321	731	kb
0446	10004	Chamberlain #1	OHIO OIL CO	05 Antm	31N-08W-14	S2 SW NE	PRDC	6093	----	6150	738	kb
0445	22639	Wolgamott #1	LINDSAY, FORREST	05 Antm	32N-08W-19	NW NW SE	PRDC	5754	----	5778	878	kb
0188	34973	Hagley #1-21	N.R.M. PETROLEUM	06 Arnc	19N-05E-21	C SE SE	PRDC	11225	----	11425	629	kb
0081	22170	Sharkey-Mustard #1	PEAK PETROLEUM CO	08 Bary	01N-07W-19	NW NW NE	PRDC	4788	----	4801	902	rf
0089	153BD	Fee #BD2	BATTLE CREEK GAS CO	08 Bary	01N-08W-14	SE SE NE	MNSM	4768	5352	6618	942	kb
0082	27731	Willison #1	MILLER BROS.	08 Bary	01N-09W-23	NE SE NE	PRDC	4597	----	4703	964	kb
0090	28494	Pennoch #1	KELLY OIL	08 Bary	02N-07W-11	E SW SE	PRDC	5117	----	5130	844	kb
0091	28493	Hollister #1	KELLY OIL	08 Bary	02N-07W-13	NW NE SW	GLND	----	----	5163	917	kb
0092	21999	Schantz #1	MCCLURE	08 Bary	02N-07W-22	C NE NW	PRDC	5162	----	5183	978	kb
0093	29092	Kopf #1	PENINSULAR OIL & GAS	08 Bary	02N-07W-36	SE SE SE	PRDC	5091	----	5136	959	kb
0088	20732	Hibbard #1	MCCLURE	08 Bary	02N-09W-34	NE SW NE	PRDC	4752	----	4944	975	rf
0085	21987	Bahs #1	BENEDUM-TREES OIL	08 Bary	03N-07W-22	C NE NE	PRDC	5445	----	5472	908	kb
0087	23589	Brooks #1	INDIANA FRM BUREAU	08 Bary	03N-07W-24	NW SW NE	PRDC	5528	----	5568	949	kb
0086	30137	Timm-Kennedy #1-14	AMOCO	08 Bary	03N-08W-14	SE NW NW	PRDC	5322	----	5390	927	kb
0094	18526	Robertson #1	REX OIL & GAS	08 Bary	03N-09W-04	SE SW SW	PRDC	5009	----	5094	816	gr
0095	7873	Kidder #1	SUN OIL	08 Bary	03N-09W-08	NW NW NW	PRDC	4973	----	5013	796	gr
0096	9618	Mead #1	SUN OIL	08 Bary	03N-09W-10	SW SW SW	PRDC	5031	----	5116	837	gr
0098	24504	Afman #1	SUN OIL	08 Bary	03N-10W-12	NE NE NE	PRDC	4872	----	5000	775	kb
0097	23572	Schaibly #1	MCCLURE	08 Bary	04N-07W-20	SE SE NW	PRDC	5643	----	5700	882	kb
0083	23363	McClellan #1	MCCLURE	08 Bary	04N-08W-03	NW SE SE	PRDC	5625	----	5663	880	kb
0084	23573	Allerding #1	MCCLURE	08 Bary	04N-08W-20	SE SE SE	PRDC	5398	----	5485	864	kb
0099	5441	Bateson #1	GULF	09 Bay	14N-04E-02	S SE SE	PRDC	10361	----	10447	599	gr
0106	23130	Warman #1	ROLAND & ROSE COATS	11 Bern	03S-17W-34	SW SW NE	PRDC	2638	----	2654	667	kb
0103	24368	Carter #1-36	CONSUMERS PWR. CO.	11 Bern	03S-18W-36	C SE SE	PRDC	2564	----	2589	732	kb
0101	6126	Herwig #1	SPRENGER BROS.	11 Bern	04S-18W-10	C E E SW	PRDC	2498	----	2711	667	gr
0105	7046	Van Lente #1	SHELBOW OIL CO.	11 Bern	04S-19W-35	SE NW NW	TMPL	2259	2466	2571	669	gr
0057	26112	Thalmann #1	SECURITY OIL & GAS	11 Bern	06S-17W-10	SE SE SE	PCMB	2430	2638	5647	804	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0102	23545	Anstiss #1-A	LEIGHTON, R.O.	11 Bern	06S-17W-14	SE SW SE	ECLR	2315	2593	2970	784	rf
0104	23823	Gifford #1	PERRY, C.A. & SON	11 Bern	06S-18W-09	SE SE SE	PRDC	2235	----	2300	749	kb
0100	24369	Schlutt #1-1	CONSUMERS PWR. CO.	11 Bern	06S-19W-01	C NE SE	PRDC	2142	----	2275	654	kb
0124	21862	Wheeler #1	OHIO OIL CO.	12 Bran	05S-05W-05	NW NW NW	PRDC	3955	----	4009	966	kb
0119	27650	King #1	UNION OIL OF CA	12 Bran	05S-05W-08	NE NE SW	PRDC	3927	----	4050	993	rt
0120	29756	Frick #1-11	MUTCH, J. O.	12 Bran	05S-05W-11	NE SE NW	GLND	?---	----	4100	1015	rt
0125	23153	Groshko #1	ILES, C & MOORE, R	12 Bran	05S-05W-12	SE NE NE	PRDC	4030	----	4068	995	rf
0126	27689	Harley #1	UNION OIL OF CA	12 Bran	05S-05W-14	SE SE SE	PRDC	3962	----	4050	1015	kb
0121	27651	Welch #1	UNION OIL OF CA	12 Bran	05S-05W-15	SW NE SW	PRDC	3960	----	4050	1020	kb
0127	21839	Wilson #1	OHIO OIL CO.	12 Bran	05S-05W-31	NE NE SW	PRDC	3770	----	3824	989	kb
0128	28167	Dobson #1	ANDERSON OIL	12 Bran	05S-05W-33	E SE NE	PRDC	3825	----	3854	999	kb
0063	34688	Copeland #1-1	N.R.M. PETROLEUM	12 Bran	05S-06W-01	NE NE NE	TMPL	4007	4280	4506	990	kb
0131	19538	Pileri #1	OHIO OIL CO.	12 Bran	05S-06W-04	SW SW NE	PRDC	3889	----	3927	971	?
0132	26926	Ratkowski #1	FULK, PERRY	12 Bran	05S-06W-13	NW SE SW	PRDC	3833	----	4020	970	kb
0138	27853	Adolph-Bartlett #1	M.I.O. EXPL.	12 Bran	05S-07W-15	SE SW SE	PRDC	3654	----	3693	908	kb
0139	21968	Mathews #2	TURNER-HARTMAN-MCCL	12 Bran	05S-07W-17	NE SE SE	PRDC	3663	----	3709	940	sp
0140	21694	Mathews #1	TURNER-HARTMAN-MCCL	12 Bran	05S-07W-20	SE NE NW	BKRV	----	----	3638	927	kb
0141	23214	Wells #1	LEONARD OIL	12 Bran	05S-07W-33	NW NW NW	PRDC	3622	----	3701	979	kb
0062	29779	Lindsay-Hostetler #1	CONSUMERS & QUINTANA	12 Bran	05S-08W-07	SE NW NE	POMB	3541	3848	5432	890	kb
0071	29969	Clark #1	CONSUMERS & QUINTANA	12 Bran	05S-08W-08	N NW NW	POMB	3569	3882	5475	889	kb
0136	31253	Rzepke #1-27	MARATHON	12 Bran	06S-05W-27	SE SE SE	PRDC	3688	----	3750	1058	kb
0137	31348	Taylor #1-35	MARATHON	12 Bran	06S-05W-35	NW NE NE	PRDC	3670	----	3730	1043	kb
0130	23639	Sklar-Loose #1	MCCLURE	12 Bran	06S-06W-36	NE NE SE	PRDC	3565	----	3635	1005	kb
0134	20700	Neaman #1	AMBASSADOR OIL CORP.	12 Bran	06S-08W-30	NE SW NW	PRDC	3326	----	3410	906	kb
0107	26296	Anspagh & Lowther #1	BELL & GAULT	12 Bran	07S-05W-21	NW SW SW	PRDC	3533	----	3776	1025	rf
0108	25758	Marsh #1	ALGONQUIN PET. CO	12 Bran	07S-05W-25	NW SW NE	PRDC	3580	----	3757	1102	kb
0109	25240	Garrison & Alderman #1	PERRY, C.A. & SON	12 Bran	07S-05W-30	NE SE SE	PRDC	3445	----	3557	1022	kb
0110	25394	Locklin #1	PERRY, C.A. & SON	12 Bran	07S-05W-31	SE SW NE	PRDC	3426	----	3570	1028	kb
0111	25208	Carlton Cook #1	PERRY, C.A. & SON	12 Bran	07S-05W-32	NW NE SW	PRDC	3444	----	3551	1043	kb
0113	23860	Meadows #1	PERRY, C.A. & SON	12 Bran	07S-05W-32	NW SW NW	PRDC	3436	----	3555	1017	rf
0112	24208	Kriser #1	PERRY, C.A. & SON	12 Bran	07S-05W-32	SW NE NW	PRDC	3446	----	3505	1035	rf
0135	23564	Armstrong #1	MCCLURE	12 Bran	07S-06W-15	NE NW NW	PRDC	3486	----	3570	1022	kb
0114	27694	Nearpass #1	M.I.O. EXPL.	12 Bran	07S-07W-01	SW SW SE	PRDC	3488	----	3602	1034	kb
0115	21893	Pierce #1	HANNERS OIL	12 Bran	07S-07W-10	SE NE SW	PRDC	3360	----	3432	955	sp
0116	27844	Claar #1	M.I.O. EXPL.	12 Bran	07S-07W-12	SE SE SE	PRDC	3468	----	3502	1027	kb
0117	27905	Donbrock #1	M.I.O. EXPL.	12 Bran	07S-07W-13	NW NE NE	PRDC	3460	----	3511	1033	kb
0118	23308	Brown #1	HADSON OIL & GAS CO.	12 Bran	07S-07W-14	NE SW SW	PRDC	3377	----	3474	988	kb
0122	22867	Wagner #1	HILLIARD	12 Bran	07S-08W-07	NE SE SE	PRDC	3183	----	3200	886	rf
0123	20685	Schlautmann #1	AMBASSADOR OIL CORP.	12 Bran	07S-08W-15	NE SW NE	ECLR	3218	----	3990	910	kb
0129	22072	Miller #1	HILLIARD	12 Bran	08S-05W-15	NE NE NE	BKRV	----	----	3218	1086	rf
0133	23686	Zias #1	MCCLURE	12 Bran	08S-06W-09	SW SE NE	PRDC	3301	----	3406	1008	kb
0466	33019	Rensel-Allen #1-13	MUTCH, J. O.	12 Bran	08S-06W-13	SW NW SW	MNSM	3297	3516	4633	1019	kb
0432	35478	Johnson #2-36	REEF PETRO CORP	13 Calh	01S-04W-36	SW SW SW	PRDC	4936	----	4988	977	kb
0479	27816	Ross #1	M.I.O. EXPL.	13 Calh	01S-05W-01	NE NW NW	PRDC	5075	----	5151	971	kb
0480	24803	Gallihugh #1	MASK, WOOD, MARKEL	13 Calh	01S-05W-08	NW SW SW	PRDC	4904	----	4978	939	kb
0389	34273	Weaver #1	LORCAN OIL & GAS	13 Calh	01S-05W-25	NW SE SE	PRDC	4870	----	4905	952	kb
0390	34221	Williams #1-26	LORCAN OIL & GAS	13 Calh	01S-05W-26	NE NW NW	PRDC	4860	----	4930	943	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0486	24536	Holden #1	DOW CHEMICAL CO.	13 Calh	01S-06W-05	SW NE NW	PRDC	4752	----	4899	865	kb
0487	22927	Smith #1	MASK, WOOD, MARKEL	13 Calh	01S-06W-30	SE SE SW	PRDC	4570	----	4662	936	kb
0428	35010	Budd-Smith #1-6	MYMACHOD	13 Calh	02S-04W-06	C S SW	PRDC	4805	----	4862	962	kb
0146	23064	Barry #1	ALEXANDER, C.	13 Calh	02S-04W-18	SE SE SE	PRDC	4757	----	4794	991	kb
0147	23438	Masternak #1	COWEN, M. T.	13 Calh	02S-04W-21	SE SE SW	PRDC	4693	----	4800	983	kb
0148	23033	North Acres	MCCLURE	13 Calh	02S-04W-29	SE NE SE	PRDC	4649	----	4704	958	kb
0149	22053	Mymochod #1	FULK, PERRY	13 Calh	02S-04W-34	NW NW SW	PRDC	4647	----	4680	981	rf
0429	35119	Hoffman #1-1	CHASE OIL CORP.	13 Calh	02S-05W-01	SE SW NE	PRDC	4858	----	4964	1002	kb
0482	22096	Ronan #1	DAVIS DRLG. CO.	13 Calh	02S-05W-27	SE SE NE	PRDC	4584	----	4633	972	kb
0483	21991	Tucker #1	KELLY, J.O.	13 Calh	02S-05W-30	SE SE SE	PRDC	4455	----	4610	922	kb
0484	26689	Food City Pickle Co. Inc. #1	MASK, MARKEL, WOOD	13 Calh	02S-06W-17	SE SE NE	PRDC	4492	----	4562	951	kb
0461	36516	Maisner #1-32	VAN BELOIS, RUSSELL	13 Calh	02S-06W-32	NW NW SW	PRDC	4336	----	4418	949	kb
0474	24715	Wyatt #1	JONES, R.E. & SONS	13 Calh	02S-07W-25	SW NW SW	PRDC	4305	----	4360	935	rf
0142	24236	Hudacheck-Courtwright #2-H	BENEDUM-TREES OIL	13 Calh	03S-04W-10	NW SW NW	PRDC	4521	----	4535	957	kb
0143	22657	Miller #1	TURTLE DRLG. CO.	13 Calh	03S-04W-22	SE SE SE	PRDC	4483	----	4530	1011	kb
0144	23576	Kinney #1	TROLZ & ASSOC.	13 Calh	03S-04W-26	NW SE SE	PRDC	4485	----	4557	1042	kb
0145	24655	Vanderburgh #1	FRONTIER PET.	13 Calh	03S-04W-36	NW NE SW	PRDC	4479	----	4500	1059	kb
0048	34619	Robinson #1-33	N.R.M. PETROLEUM	13 Calh	03S-05W-33	SW SW SE	PRDC	4245	----	4315	982	kb
0475	23031	Lee #1	SMITH, R.C.	13 Calh	03S-06W-09	SW SW SE	PRDC	4286	----	4345	961	kb
0476	23389	Maynard #1	PETROSONIC	13 Calh	03S-06W-15	SW NE SW	ECLR	4264	----	4646	963	kb
0485	23292	Spooner #1	CITIES SERVICE CO.	13 Calh	03S-07W-23	C SE SW	PRDC	4095	----	4188	925	kb
0467	22352	Bernloehr #1	TRENTON P & MCCLURE	13 Calh	03S-08W-13	SE SW SW	ECLR	4051	4480	4739	952	kb
0481	23038	Englehard #1	HATHOCK, LEE A.	13 Calh	03S-08W-16	NW NW SE	PRDC	3994	----	4025	958	kb
0477	24310	Mills-Chamberlain Comm. #1	TURNER PETRO. CORP.	13 Calh	04S-04W-20	NW NE NE	PRDC	4264	----	4335	1048	kb
0478	21340	Van Wert #1	BELL & GAULT	13 Calh	04S-04W-36	SE NE SE	PRDC	4179	----	4212	1019	rf
0472	29148	Butters #1-11	MCCULLOCH-IDS-ANCHUT	13 Calh	04S-05W-11	NW SE	PRDC	4239	----	4300	1010	kb
0473	24556	BNlashfield #1	CALIFORNIA CO.	13 Calh	04S-05W-20	C NW NE	PRDC	4126	----	4195	1018	kb
0150	23563	Davis #1	MCCLURE	13 Calh	04S-06W-17	SE SW NE	PRDC	4022	----	4128	990	kb
0151	30731	Hughes #1-19	KIRBY-CONS-QUINTANA	13 Calh	04S-06W-19	C SW SE	PRDC	3945	----	4057	962	kb
0152	22476	Spires #1	MCCLURE	13 Calh	04S-06W-21	NE SE SE	PRDC	3960	----	3986	941	rf
0470	22789	Platz #1	PERRY, C.A. & SON	13 Calh	04S-07W-03	NE NW NE	PRDC	4022	----	4048	961	kb
0471	28321	Hyatt etal Unit #1	M.I.O. EXPL.	13 Calh	04S-07W-33	NE NE NE	PRDC	3781	----	3817	904	kb
0156	23668	McKenzie #1	SIMPSON, C. J.	14 Cass	05S-13W-31	NE NW SE	PRDC	2965	----	2981	922	kb
0180	34763	Willbrandt-Hemenway #1-8	HALLWELL, INC.	14 Cass	05S-14W-08	SE NW NE	ECLR	2921	3234	3998	885	kb
0058	34367	McKenzie #1	HALLWELL, INC.	14 Cass	05W-14W-26	SW SW NW	ECLR	2914	3715	4000	967	kb
0179	34773	McKenzie #1-8	HALLWELL, INC.	14 Cass	06S-13W-08	NE NW SW	ECLR	2978	3265	4000	988	kb
0059	34347	Kinney #1	HALLWELL, INC.	14 Cass	06S-13W-09	SE NW SE	PRDC	3016	----	3059	987	kb
0158	23698	Kimmick#1	SIMPSON, C. J.	14 Cass	06S-14W-14	SE NW SE	PRDC	2850	----	2933	922	kb
0402	35553	Bonine #1-22	HALLWELL, INC.	14 Cass	06S-14W-22	SE NE SE	PRDC	2767	3021	3238	890	kb
0433	35459	Holdeman #1-31	HALLWELL, INC	14 Cass	07S-13W-31	SW SW SE	PRDC	2674	?---	3800	879	kb
0153	23289	Wooden #1	PERRY, C.A. & SON	14 Cass	07S-14W-08	SE NE SW	OMBR	2649	2888	3950	865	kb
0060	34304	Lawson #1	HALLWELL, INC.	14 Cass	07S-14W-28	SE SE SE	MNSM	2652	2890	3875	967	kb
0154	17414	Gemberling #1	VAN RAALTE	14 Cass	07S-14W-36	SE SW SW	PRDC	2625	2925	3093	904	gr
0155	23290	Kaminski #1	PERRY, C.A. & SON	14 Cass	07S-15W-26	NE NW SW	PRDC	2460	----	2603	845	kb
0460	22047	Gordon, William #1	MCCLURE & HARRIS	14 Cass	08S-14W-03	NE SW SE	PRDC	2498	----	2610	847	kb
0157	22913	Anderson #1	SPILLER OIL CO.	14 Cass	08S-14W-16	E NE NE	OMBR	2545	2720	3300	848	gr

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0184	34824	N.M.L.O. Corp. #1-27	ENERGY ACQUIS.	15 Chrl	32N-04W-27	NW SW NW	PRDC	6699	7500	8902	1145	kb
0465	36260	Bradfield, Frank #1	SUN EXPL & PROD CO	15 Chrl	32N-04W-33	SE SW NW	PRDC	6690	7501	8030	1195	kb
0183	29079	Hand #1	BENEDUM & MGU DEVEL.	15 Chrl	34N-07W-13	NE NE NE	STPR	----	----	5022	743	kb
0211	29119	Clark #1	BENEDUM & MGU DEVEL.	15 Chrl	34N-07W-14	C SE NW	STPR	----	----	5008	717	kb
0005	23478	St Bvr Isl #2	MCCLURE	15 Chrl	37N-10W-06	NE SW SE	POMB	3325	3728	4803	741	kb
0159	23681	Goddard #1	MCCLURE	15 Chrl	37N-10W-19	SW NE NE	TMPL	3380	3820	3950	661	kb
0004	23435	St Bvr Isl #1	MCCLURE	15 Chrl	38N-10W-27	NE NE NW	POMB	3192	3582	5383	678	kb
0233	35060	Salling-Hanson #1-11	SUN OIL	16 Cheb	34N-02W-11	SW SE NW	FRNC	4842	5391	5940	813	kb
0191	33156	Sand Mold Inc. #1-9	MUTCH, J. O.	16 Cheb	35N-01W-09	S SE NE	TMPL	4589	5032	4407	904	kb
0160	29611	Whitener #1-16	HILLIARD	16 Cheb	35N-01W-16	SE NW SW	PRDC	4692	----	4740	840	kb
0006	30682	St Waverly #1-24	NO. MI. EXPL. CO.	16 Cheb	35N-01W-24	NE SW NE	MNSM	4600	5080	5753	801	kb
0003	33253	Potozak #1-12	KUGHN-GASOIL	17 Chip	42N-02E-12	SW SE SE	PRDC	1322	----	1343	752	gr
0002	34678	Zbiega #1-6	KUGHN-GASOIL	17 Chip	42N-03E-06	NW SW NW	MNSG	----	----	1189	745	gr
0181	34807	Brenzie #1-18	KUGHN	17 Chip	42N-03E-18	SW NW NW	PRDC	1340	----	1420	750	gr
0163	NO P#	Pickford Well (WW)	(reported 6-7-07)	17 Chip	43N-01E-06		MNSG	----	----	1500	670+	gr
0164	16324	Mattson #1	JETTER, CHARLES	17 Chip	44N-02W-06	SE SW SW	STPR	----	----	805	683	gr
0161	7852	McKee #1	MCKEE EXPL CLUB	17 Chip	45N-01E-18	C NE	JBVL	----	----	587	694	gr
0162	NO P#	Neebish Well (WW)	(reported 1-15-1900)	17 Chip	45N-02E-18		JBVL	----	----	527	587+	gr
0165	29022	Wilson #1	TRICO OIL CO.	17 Chip	46N-02W-08	NW NE SE	JBVL	----	----	1305	665	gr
0032	34611	Weingartz #1-7	JEM PETRO. CORP.	18 Clar	17N-04W-07	NE NE NE	TMPL?	10758	11712	11864	1004	kb
0190	34790	Brandt #1-34	DOME PETROLEUM	18 Clar	17N-06W-34	SW NW	FRNC	10408	11358	13022	1121	kb
0469	35781	Gernaat #2-19	ROM ENERGY	18 Clar	20N-06W-19	SW SW NE	PRDC	10458	----	11563	1186	kb
0030	33680	Winterfield Deep A #1	HUNT ENERGY	18 Clar	20N-06W-30	NE SE NW	PRDC	10580	11740	12017	1158	kb
0166	27811	Fox #1	MCCLURE	19 Clnt	07N-01W-06	SW SE SW	PRDC	7582	----	7787	773	kb
0451	35587	State Beaver Creek #1-5	MILLER BROTHERS	20 Craw	25N-03W-05	C N2 NE	PRDC	10110	----	10447	1277	kb
0167	28110	St Beaver Creek C #4	UNION OIL OF CA	20 Craw	25N-04W-21	W NE SW	PRDC	9959	----	10142	1239	rt
0174	27766	Whittum #1	TROLZ & ASSOC.	23 Eatn	01N-03W-03	W SW SE	PRDC	5522	----	5670	907	kb
0171	29059	Holcomb #1	PENINSULAR OIL & GAS	23 Eatn	01N-04W-19	SE SE SE	PRDC	5192	----	5289	945	kb
0320	35258	Coats #1-26	TRENDWELL	23 Eatn	01N-04W-26	SE NE SE	PRDC	5258	----	5613	947	kb
0176	28163	Sheets #1	BAG MINING CO.	23 Eatn	01N-05W-17	NE NW NE	PRDC	5126	----	5174	883	kb
0177	28263	Schneeberger-Murphy #1	M.I.O. EXPL.	23 Eatn	01N-05W-27	NE NE NE	PRDC	5105	----	5163	920	kb
0178	30291	Snow #1-28	FORTUNA & SOKOLOWSKI	23 Eatn	01N-05W-28	NW SE SW	PRDC	5024	----	5125	910	kb
0168	22497	Palmer-Miller #1	FULK, PERRY	23 Eatn	01N-06W-02	SE SE SW	PRDC	5168	----	5247	949	kb
0169	22541	Black #1	LAWTON & HACK DRLG.	23 Eatn	01N-06W-17	C SW NW	PRDC	5006	----	5116	956	kb
0170	27898	Yeomans #1	FORTUNA OIL	23 Eatn	01N-06W-24	SE NW SW	PRDC	4989	----	5050	875	kb
0173	29117	Kelly #1	MOBIL	23 Eatn	02N-03W-24	W NE NW	MNSM	5750	6430	6922	870	kb
0172	22672	LaMont #1	PETROLIA CORP.	23 Eatn	02N-05W-18	SW SE SW	PRDC	5380	----	5462	923	kb
0175	30214	Ripley #1-25	WENNER PETRO.	23 Eatn	02N-06W-25	NW NE NE	PRDC	5315	----	5380	926	kb
0310	35090	Martin #1-15	HUNT ENERGY	26 Glad	17N-01E-15	NE NW NE	MNSM	11305	12433	15859	735	kb
0011	34132	Weber-Sheren #6-9	SHELL	28 GdTv	25N-11W-09	SW SW SE	PRDC	8064	----	8476	1101	kb
0010	34292	St Blair #2-24	SHELL	28 GdTv	26N-11W-24	SW SE NE	POMB	7662	8683	11020	915	kb
0001	29739	Sparks et al #1-8	MCCLURE	29 Grat	10N-02W-08	NE SW NW	PRDC	8539	9070	17466	762	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0238	26290	Richer, J. J. #1	SUN OIL & GEO. SWAN	30 Hils	05S-01W-19	SW SW SE	PRDC	4302	----	4368	1159	rf
0239	27065	Prosser, Alfred #1	LEIGHTON PETRO	30 Hils	05S-01W-21	NW NW SW	PRDC	4376	----	4420	1111	kb
0240	22088	Robertson, J. #1	HELLER, WILLIAM	30 Hils	05S-01W-34	NW NE SE	PRDC	4213	----	4258	1124	kb
0241	25392	Bowman, B. & H. #1	BELL & GAULT	30 Hils	05S-01W-36	SW NW SE	PRDC	4138	----	4230	1024	rf
0221	22763	Rynex #1	COLLIN	30 Hils	05S-02W-02	SW SW SW	PRDC	4364	----	4380	1111	kb
0222	25642	Cobb, Luther #1	NANCO INC.	30 Hils	05S-02W-07	NW SW SW	PRDC	4306	----	4337	1149	kb
0223	22877	Durga	HANNERS OIL	30 Hils	05S-02W-23	SE SE NE	PRDC	4265	----	4343	1116	rf
0226	21975	Stephens et al #2	DAVIS DRLG. CO	30 Hils	05S-03W-15	NW NE NE	PRDC	4115	----	4133	1046	kb
0227	22022	Notrhrup-Hergert #2	MCCLURE	30 Hils	05S-03W-25	SE NW SE	PRDC	4175	----	4255	1174	kb
0215	26114	Pearson #1	BELL & GAULT	30 Hils	05S-03W-35	SE NE NE	PRDC	4147	----	4163	1183	rf
0219	24907	Randall #1	NO. AMER. DRLG. CO.	30 Hils	05S-04W-11	SE NW NE	PRDC	4131	----	4243	1028	kb
0220	29150	Smith # 1-22	MCCULLOCH	30 Hils	05S-04W-22	C SE NW	PRDC	4042	----	4097	1036	kb
0431	34093	Trombley #1-24	MCOR OIL & GAS	30 Hils	05S-04W-24	SE SW SE	PRDC	4091	----	4163	1104	kb
0242	26370	Adams #1	MCCLURE	30 Hils	06S-01W-23	SW SE NW	PRDC	3988	----	4089	1069	kb
0192	22625	Roberts-Sponseller #1	ARROWHEAD EXPL.	30 Hils	06S-02W-04	NW SE NW	PRDC	4176	----	4213	1180	kb
0193	23875	Roberts #1	R & H DEVEL.	30 Hils	06S-02W-07	SE SW NE	PRDC	4076	----	4142	1140	kb
0194	22597	N. Adams School #1	ROBERTSON, E.K.	30 Hils	06S-02W-10	SE SW NE	PRDC	4146	----	4194	1199	kb
0195	22419	Andrews #1	O'BRIEN & MEYERS	30 Hils	06S-02W-14	NW SW NW	PRDC	4069	----	4110	1146	kb
0196	24169	Dodge #A-1	MCCLURE	30 Hils	06S-02W-18	NW NE NE	PRDC	4070	----	4130	1140	kb
0197	23590	Liska #1	JENKINS & WOODRUFF	30 Hils	06S-02W-22	NW NW SW	PRDC	4068	----	4113	1161	rf
0198	21771	Summers #1	MCCLURE & HARTMAN	30 Hils	06S-02W-32	NW NE NE	PRDC	3986	----	4068	1180	kb
0214	22172	Claybaugh #1	FAYETTE DRLG. CO.	30 Hils	06S-03W-14	NE NE NW	PRDC	4008	----	4058	1132	rf
0199	23613	Espie #1	PAULEY OIL	30 Hils	06S-04W-01	SW SW SE	PRDC	3992	----	4044	1112	rf
0200	26578	Marshall #1	HOUSEKNECHT OIL	30 Hils	06S-04W-08	NE SE SW	PRDC	3855	----	3891	1076	rf
0201	26500	Price-Stafford #1	HOUSEKNECHT OIL	30 Hils	06S-04W-20	SW SW SW	TMPL	3743	3990	4099	1062	kb
0202	31295	Kline-Russell #1-21	MARATHON	30 Hils	06S-04W-21	S SE NE	PRDC	3810	----	3900	1083	kb
0203	23677	Clark #1	CUMMINGS, ARTHUR L.	30 Hils	06S-04W-35	SE NE NW	PRDC	3872	----	3950	1163	kb
0228	21951	Crittenden #1	EUREKA OIL & GAS	30 Hils	07S-01W-02	NW NW NW	PRDC	3914	----	3991	1090	kb
0229	22446	Julian #1	SIMPSON, C. J.	30 Hils	07S-01W-04	NW NW SE	PRDC	3917	----	3937	1104	kb
0230	22203	Severance #1	CARTER OIL	30 Hils	07S-01W-29	NW NW SE	PRDC	3625	----	3691	965	kb
0231	23058	Plum #1	MCCLURE	30 Hils	07S-01W-35	SW SW SW	PRDC	3500	----	3575	915	rf
0317	34944	Shipman #1-36	GIANT PETRO.	30 Hils	07S-01W-36	C NW NE	PRDC	3560	----	3645	935	kb
0216	26788	Joughin-Stuck #1	LIBERTY PETRO.	30 Hils	07S-02W-02	NE SE SW	PRDC	3914	----	4037	1163	rf
0217	26278	Reynolds #1	HOUSEKNECHT & MCLUR	30 Hils	07S-02W-08	SE NE NE	PRDC	3857	----	3910	1121	kb
0218	21869	Bailey-Sanders #1	HILLSDALE & MCCLURE	30 Hils	07S-02W-24	NW NW NE	PRDC	3765	----	3839	1080	kb
0205	25895	Houtz #1	PERRY, C.A. & SON	30 Hils	07S-03W-07	SE SE NE	PRDC	3710	----	3777	1087	kb
0206	28166	Grace #1	ANDERSON OIL	30 Hils	07S-03W-29	W NW NE	PRDC	3528	----	3547	1064	rt
0234	21910	Hoard #1	OHIO OIL CO	30 Hils	07S-04W-03	NW NW SE	PRDC	3750	----	3804	1104	kb
0235	23817	Clifton #1	COVEY & NULL	30 Hils	07S-04W-07	NE NE SW	PRDC	3688	----	3744	1082	rf
0236	26688	Price #1	SIMPSON, C. J.	30 Hils	07S-04W-27	C SW SW	PRDC	3643	----	3741	1159	kb
0237	21856	Cox #1	CLERICI & PHILLIPS	30 Hils	07S-04W-27	NE SW NE	PRDC	3587	----	3664	1081	kb
0243	27517	Frank #1	LIBERTY PETRO.	30 Hils	08S-01W-06	NW SE SE	PRDC	3523	----	3700	980	kb
0244	22536	Young #1	BELL & GAULT	30 Hils	08S-01W-11	NE NE NW	TMPL	3440	3600	3729	920	rf
0245	26488	Landel #1	LIBERTY PETRO.	30 Hils	08S-01W-20	SE SE SE	TMPL	3330	----	3463	894	rf
0246	22820	Day #1	UNION DEV.	30 Hils	08S-01W-35	SW NW SE	PRDC	3237	----	3343	868	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0232	22298	Miller et al #1	COVEY & NULL	30 Hils	08S-02W-04	NW NW SW	PRDC	3609	----	3692	1071	rf
0204	22021	Hayes Curtis #1	MCCLURE OIL	30 Hils	08S-03W-23	NE NE SW	PRDC	3421	----	3514	1025	kb
0207	26687	Huggett #1	SIMPSON, C. J.	30 Hils	08S-04W-02	C SE NW	PRDC	3494	----	3578	1069	kb
0209	23973	DePue #1	WHITMER	30 Hils	08S-04W-10	SE SE SE	PRDC	3455	----	3531	1080	kb
0208	21773	Eby #1	MCCLURE	30 Hils	09S-04W-05	SW SW NE	PRDC	3310	----	3395	1072	rf
0037	29191	Volmering #1	MOBIL	32 Hurn	15N-15E-26	NE NE NE	POMB	7290	8180	9071	711	kb
0247	29672	Reeve #1	MOBIL	33 Ingm	01N-01W-36	CW SE SW	FRNC	5645	6181	6300	977	kb
0039	28607	Krantz #1	MOBIL	33 Ingm	02N-01W-29	NE	BSMT	5920	6400	7866	939	kb
0210	23482	Troyer #1	MCCLURE	34 Iona	05N-08W-28	SW SE NE	PRDC	5673	----	5700	816	kb
0319	27700	Possehn #1	HUNTING OIL CO.	34 Iona	06N-06W-31	C SW SW	PRDC	6223	----	6400	873	kb
0315	27441	Sprague #1	MOORE, JOE INC.	34 Iona	06N-08W-04	W NW NE	PRDC	6048	----	6138	705	kb
0224	24619	Ten Cate #1	AMBASSADOR OIL CORP.	34 Iona	07N-08W-34	C SE SW	STPR	----	----	6201	775	kb
0314	26990	Essington #1	AN-SON CORP.	34 Iona	07N-08W-35	C NW SW	PRDC	6242	----	6313	820	kb
0262	32714	Faist-Kelly-Luck #1-7	TOTAL PETRO.	38 Jksn	01S-01E-07	SW NE NW	PRDC	5584	----	5653	957	?
0273	32577	Total et al #1-11	TOTAL PETRO.	38 Jksn	01S-01W-11	NE NE NE	PRDC	5662	----	5686	928	kb
0281	26481	Crawford #1	MCCLURE	38 Jksn	01S-03W-04	NE SE SE	PRDC	5231	----	5286	946	kb
0282	23269	Skinner Comm.#1	HUMBLE OIL	38 Jksn	01S-03W-11	NW NE SW	PRDC	5235	----	5254	944	kb
0283	22558	McArthur-Cockroft #1	PETROMIN	38 Jksn	01S-03W-15	SE NE NE	PRDC	5186	----	5250	939	kb
0284	22175	Campbell #1	FULK & ROVSEK	38 Jksn	01S-03W-36	NW NW NW	PRDC	5153	----	5212	1032	kb
0248	22483	Sargent #1	DAVIS DRLG. CO.	38 Jksn	02S-01W-10	NW NW NE	PRDC	5173	----	5198	961	kb
0249	26981	Franks #1	FRANKS, JOHN	38 Jksn	02S-01W-17	SE SW NE	PRDC	5099	----	5139	971	rf
0274	26549	Vedder #1	TEXACO	38 Jksn	02S-02W-10	SW NE SE	PRDC	5070	----	5128	974	kb
0275	26541	Konkol #1	TEXACO	38 Jksn	02S-02W-15	SW NE NW	PRDC	5036	----	5197	985	kb
0276	22246	Palmer #1	RUNYON & MAYER	38 Jksn	02S-02W-19	NW NE SW	PRDC	4965	----	4984	1005	rf
0268	22808	Hartung #1	PETROMIN	38 Jksn	02S-03W-09	NW SW NW	PRDC	4970	----	4996	1015	kb
0212	34941	Komps Farm #1-22	TOTAL & WOLVERINE	38 Jksn	02S-03W-22	SW NE NW	PRDC	4840	----	4925	961	kb
0265	21898	Boone #1	DART, JAMES A.	38 Jksn	03S-01E-26	NW NW NE	PRDC	4766	----	4903	959	rf
0285	22442	Hill #1	COLLIN & BLACK	38 Jksn	03S-01W-28	C N NW	PRDC	4696	----	4848	968	kb
0286	22275	Dancer #1	COLLIN & BLACK	38 Jksn	03S-01W-29	SW NW SE	TMPL	4661	----	6088	997	kb
0312	35153	Dorr #1	TEXACO	38 Jksn	03S-02E-01	SW NW NW	PRDC	5105	----	5202	1041	kb
0257	23399	Culbert #1	AMER. HYDROCARB.	38 Jksn	03S-02E-22	C SW SW	PRDC	4814	----	4953	962	rf
0277	21723	Race #1	HAMMER OIL	38 Jksn	03S-02W-01	SW SW SW	PRDC	4862	----	4883	1023	rf
0278	21966	Grant #1	MOCO, THE	38 Jksn	03S-02W-19	SE NW NE	PRDC	4630	----	4657	994	rf
0279	22950	Burnett #1	ROVSEK & VOLK	38 Jksn	03S-02W-31	SE SW NE	PRDC	4581	----	4668	1044	kb
0280	27672	Reed #1	SWAN & MI CON.	38 Jksn	03S-02W-36	NE NE NE	PRDC	4661	----	4702	1039	kb
0252	27708	Pitdchford #1	M.I.O. EXPL.	38 Jksn	03S-03W-02	NW NW NW	PRDC	4740	----	4800	1000	kb
0253	22742	Bennett #1	PALMER & CUMMINS	38 Jksn	03S-03W-05	NW SE NE	PRDC	4708	----	4783	1012	kb
0254	22107	Paquette #1	MCCLURE	38 Jksn	03S-03W-14	SE NE SW	PRDC	4640	----	4683	991	rf
0255	27137	Smith #2	NANCO INC.	38 Jksn	03S-03W-30	SW SW NE	MNSM	4470	4882	5936	1018	kb
0339	35734	Joers #1-32	NRM PETRO.	38 Jksn	03S-03W-32	NE NE SW	PRDC	4474	----	4524	1014	kb
0256	24840	McFarlane #1	ROVSEK, A. E.	38 Jksn	03S-03W-35	NE NE SE	TMPL	4554	4942	5199	1079	kb
0250	21982	Reed #1	REED, RAYNER	38 Jksn	04S-01E-07	SE SW SE	PRDC	4550	----	4566	987	kb
0251	28305	Wellhoff #1	COWEN, M. T.	38 Jksn	04S-01E-10	C SE NE	PRDC	4621	----	4651	996	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0049	34645	Schultz #1-33	N.R.M. PETROLEUM	38 Jksn	04S-01E-33	SE SE SW	PRDC	4412	----	4550	1041	kb
0263	21514	Dougals & Kerr #1	ROBERTS, HARRY	38 Jksn	04S-01W-09	NE NE SW	PRDC	4550	----	4614	1035	kb
0264	22568	Weatherwax #1-33	PANHANDLE E. PPL.	38 Jksn	04S-01W-33	SE SW SW	PRDC	4426	----	4504	1069	rf
0266	22017	Baylis #1	OTTERBINE & DONLEY	38 Jksn	04S-02E-09	SW SW NE	PRDC	4612	----	4685	964	kb
0267	19444	Watkins Farms #1	TAGGART	38 Jksn	04S-02E-13	SW SW NE	TMPL	4576	----	4700	1014	kb
0258	28272	Lincoln #1	OCCIDENTAL	38 Jksn	04S-02W-03	N SE NW	PRDC	4538	----	4575	1022	kb
0259	21776	Tripp #1	WOLVERINE & CARTER	38 Jksn	04S-02W-09	SE NW NW	PRDC	4512	----	4604	1028	kb
0031	36384	Hall et al #1-13	JEM PETRO. CORP.	38 Jksn	04S-02W-13	SE NW SE	PRDC	4489	----	4598	1057	kb
0260	23788	Cornstubbel #1	SALMON, FARN H.	38 Jksn	04S-02W-20	NW SW SW	PRDC	4442	----	4492	1107	rf
0261	25190	Harris #1	PERRY, C.A.	38 Jksn	04S-02W-34	SE NW SE	PRDC	4389	----	4500	1110	kb
0269	19931	Wilson #4	HUMBLE OIL	38 Jksn	04S-03W-07	SW NE SE	PRDC	4356	----	4500	1017	kb
0270	21973	Lovitt #1	DAVIS DRLG. CO.	38 Jksn	04S-03W-16	NW SW SE	PRDC	4370	----	4459	1056	kb
0271	23022	Day #1	PETROMIN	38 Jksn	04S-03W-19	SE SE NE	PRDC	4290	----	4376	1011	kb
0272	22664	Hancock-Loud #1	DAVIS DRLG. CO.	38 Jksn	04S-03W-27	NW NE SW	PRDC	4392	----	4435	1123	kb
0459	20572	Todd #1	MCCLURE	39 Kazo	01S-10W-27	NE SE SE	STPR	----	----	4125	916	ch
0454	23035	Rumsey #1	TURTLE DRLG. CO.	39 Kazo	01S-12W-10	SE SW NW	PRDC	3796	----	3860	789	kb
0456	31099	Peugh #1	MOBIL	39 Kazo	02S-09W-04	NE SE NW	PRDC	4024	----	4080	806	kb
0457	27508	Hayward #1	ASHLAND O & REF.	39 Kazo	03S-10W-31	SW SE SW	PRDC	3530	----	3660	874	kb
0458	BD21	UpJohn #4	UPJOHN CO	39 Kazo	03S-11W-14	NE NE SE	POMB	3610	3991	5600	874	kb
0455	23004	Bowerman #1	ALEXANDER, C.	39 Kazo	04S-10W-11	NW SE NE	PRDC	3586	----	3632	893	kb
0013	33596	Borgen #1-30	STRICKLER	40 Kalk	25N-07W-30	NE NE NE	PRDC	9765	----	10107	1091	kb
0012	34208	Consumers Pwr #1-34	JEM PETRO. CORP.	40 Kalk	25N-08W-34	NW SW SW	PRDC	9308	----	10413	1018	kb
0322	34613	St-Blue Lake #3-23	SHELL	40 Kalk	28N-05W-23	NE NW NW	PRDC	9094	----	9214	1315	kb
0434	BD156	Alto #2-156	OHIO NW DEVEL. INC.	41 Kent	05N-09W-03	N NE NE	MNSM	5631	6410	7820	831	kb
0435	11540	Sherk #1	SMITH PETRO.	41 Kent	05N-10W-21	C SE SE	PRDC	5146	----	5200	758	gr
0440	26946	Wingeier #1	AN-SON CORP.	41 Kent	07N-09W-02	C SE NW	PRDC	6311	----	6393	857	kb
0441	9166	Riddering #1	PROCUCER COMMITTEE	41 Kent	07N-12W-30	E SE SE	prdc	5165	----	5222	739	gr
0438	24826	Ten-Have #1	AMBASSADOR OIL CORP.	41 Kent	08N-09W-06	C NW SE	PRDC	6488	----	6560	867	kb
0439	24627	Francisco #1	AMBASSADOR OIL CORP.	41 Kent	08N-09W-35	C NW NE	PRDC	6404	----	6473	827	kb
0436	26908	Parmeter #1	AN-SON CORP. ETAL	41 Kent	09N-10W-26	C SE SE	PRDC	6570	----	6652	911	kb
0437	27296	Goss #1	BEACON RESOURCES	41 Kent	09N-10W-35	C SE NW	PRDC	6522	----	6598	944	kb
0442	22627	Kirt #1	LINDSAY, FORREST	45 Leln	30N-11W-06	NW SW SE	PRDC	5725	----	5750	925	kb
0301	18290	Sawyer #1	BREHM, E. E.	46 Lenw	05S-01E-18	S SW NW	PRDC	4340	----	4453	1089	gr
0302	22781	Wheaton #1	LENAWEE CO. RD. COM.	46 Lenw	05S-01E-21	SE SE NW	PRDC	4321	----	4420	1091	rf
0326	23277	Myers#1	FARMERS OIL DRLG.	46 Lenw	05S-02E-05	SW NE SW	PRDC	4370	----	4406	1006	rf
0318	31972	VanValkenburg #1-25	REEF	46 Lenw	05S-03E-25	SE SE NE	PRDC	4065	----	4115	890	kb
0064	34689	Selders #1-36	N.R.M. PETROLEUM	46 Lenw	05S-03E-36	SE SE NE	PRDC	3985	----	4220	853	kb
0327	28868	R. & M. Service #1	CAMBRIDGE O & G	46 Lenw	05S-04E-02	C SW SE	PRDC	3817	----	4000	895	kb
0328	22886	Allen #1	MCCLURE	46 Lenw	05S-04E-14	NE NW SW	PRDC	3927	----	4046	872	kb
0335	24304	Delodder #GG-1	GOOD & GOOD	46 Lenw	05S-05E-03	SE SE SW	PRDC	3477	----	3555	760	rf
0336	31792	Gorton #1-9	GULF	46 Lenw	05S-05E-09	SE SE SE	TMPL	3440	3762	3805	772	kb
0337	31919	Gilmore #1-15	GULF	46 Lenw	05S-05E-15	SE SW NW	TMPL	3410	3718	3798	760	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0321	35278	Brandt-Royal One #1	ROYAL PET. PROP. INC	46 Lenw	05S-05E-16	C NE NW	TMPL	3510	----	3792	772	kb
0338	3353	Downing #1	SOCONY-VACUM	46 Lenw	05S-05E-36	NE NE SW	PRDC	3103	----	3437	698	gr
0296	23838	Hawkins #1	TROLZ & ASSOC.	46 Lenw	06S-01E-20	SE NW SE	PRDC	3895	----	3962	979	rf
0297	28168	Brooks #1	ANDERSON OIL	46 Lenw	06S-02E-04	NE SW SW	PRDC	4038	----	4076	1010	kb
0298	23751	Drewyor #1	LAWTON, R. G.	46 Lenw	06S-02E-25	NE SE NE	PRDC	3680	----	3752	864	rf
0299	28529	Rupert #1	OCCIDENTAL	46 Lenw	06S-02E-29	SW SE NE	PRDC	3770	----	3852	930	kb
0324	22112	Francouer #1	SEVEN SEAS CO.	46 Lenw	06S-03E-18	NW NE SW	PRDC	3800	----	3900	888	kb
0295	25807	Brenke #1	BESKO ENT.	46 Lenw	06S-04E-02	SW SW SW	PRDC	3670	----	3752	792	rf
0331	26411	Muck #1	ASHLAND O & REF.	46 Lenw	07S-02E-13	SW SE SE	TMPL	3543	----	3800	840	kb
0332	23737	Emerson #1	AMER. HYDROCARB.	46 Lenw	07S-02E-27	NW NE SE	PRDC	3356	----	3468	840	kb
0287	23087	Gemple #1	A.P.A. OIL	46 Lenw	07S-03E-25	SE SW SW	PRDC	3350	----	3427	753	rf
0288	26876	Meech & Griffth #1-H	HORIZON OIL, INC.	46 Lenw	07S-03E-30	SW SE NW	PRDC	3419	----	3685	799	kb
0325	25556	Wahl #1	BELL & GAULT	46 Lenw	07S-05E-05	SE NW NE	PRDC	3211	----	3250	689	rf
0329	24554	Yape #1	M.V.O.C. INC.	46 Lenw	07S-05E-14	SE SE SE	PRDC	3065	----	3112	681	rf
0330	25016	Gerber #1	BERNHARDT O & G	46 Lenw	07S-05E-25	NE NE NE	PRDC	2696	----	2901	687	rf
0289	24491	Moore #1	BAUER BROS.	46 Lenw	08S-01E-03	NE NE SW	PRDC	3410	----	3558	875	rf
0290	27046	Beal #3	BAUER BR.& BASIN OIL	46 Lenw	08S-01E-04	NE NE SE	PRDC	3396	----	3773	867	kb
0341	23863	Gillen #1	HOUSEKNECHT OIL	46 Lenw	08S-01E-12	NE NE NW	PRDC	3050	----	3150	766	rf
0342	23652	Walter #1	MOCO, THE	46 Lenw	08S-01E-18	SW SE NW	PRDC	3346	----	3488	872	kb
0291	24882	Lipp #A-1	HACKETT, D. WAYNE	46 Lenw	08S-01E-25	NW NW NE	PRDC	3185	----	3238	810	kb
0292	21916	Sly & Ferris #1	BUCK & BASIN	46 Lenw	08S-01E-27	NW NW NW	PRDC	3250	----	3352	831	rf
0293	25931	Flint #1	MOCO, THE	46 Lenw	08S-01E-31	NW NE NW	PRDC	3244	----	3367	840	rf
0300	23718	Snyder #1	HOWARD, ELLIS M.	46 Lenw	08S-02E-20	NW SE NW	PRDC	3208	----	3284	790	kb
0333	23527	Snedicor & Underhill #1	BASIN OIL	46 Lenw	08S-03E-17	SE NE SE	PRDC	3233	----	3281	749	rf
0334	23618	Raymond #1	NEPTUNE O & G	46 Lenw	08S-03E-27	SE SE SE	PRDC	3126	----	3191	748	rf
0294	16693	McClenathen #1	BUCK & BASIN	46 Lenw	08S-04E-18	NE NE NW	PRDC	3173	----	3217	717	rf
0065	10448	Taylor #1	ECKERT, WALTER H.	46 Lenw	08S-05E-32	SE NE SW	POMB	2918	3148	3902	715	gr
0343	31961	American Agg. #1-13	ARBUCKLE	47 Lvng	01N-06E-13	NW NE SW	PRDC	5564	----	5607	940	kb
0304	26999	Kish #1	TEXACO	47 Lvng	01N-06E-14	SW NW SW	PRDC	5391	----	5560	936	kb
0305	27720	American Agg. #1	TEXACO	47 Lvng	01N-06E-15	C NW NE	PRDC	5498	----	5560	910	kb
0306	31695	Reed #1-25	ARBUCKLE	47 Lvng	01N-06E-25	SE NW SE	PRDC	5485	----	5563	931	kb
0309	28752	Kleinschmidt #1	PATRICK PETRO.	47 Lvng	02N-03E-17	NW NW NE	PRDC	5899	----	6092	960	kb
0345	16067	Wilson-Bush #1	PANHANDLE E. PPL.	47 Lvng	02N-04E-12	SE NW NE	PRDC	5742	----	5752	934	kb
0346	25868	Kizer #1	BRAZOS	47 Lvng	02N-04E-14	SW SW NE	MNSM	6228	6450	7210	939	kb
0307	23374	Soule #1	HUMBLE OIL	47 Lvng	03N-03E-02	C NE NE	PRDC	5604	----	5685	938	kb
0308	31900	Rhodes #1-30	NO. NAT. GAS	47 Lvng	03N-03E-30	NE NE NE	PRDC	6586	----	6700	927	kb
0344	2179	McPherson #1	PANHANDLE E. PPL.	47 Lvng	03N-04E-35	NE NE NW	PRDC	5895	----	5958	914	gr
0040	27986	Messmore #1	MOBIL	47 Lvng	03N-05E-11	NE NW NE	POMB	6205	6442	7589	980	kb
0303	22642	Scepka #1	WHITE, JOE B.	47 Lvng	04N-03E-28	NE NW NE	PRDC	5975	----	6032	899	rf
0347	3397	Hiawatha Club #1	VAN KEUREN, CHARLES	49 Mack	44N-09W-17	NE NE SW	PRDC	1345	----	1500	856	gr
0468	36238	Cusamano & Divito #1-22	PATRICK PETROLEUM	50 Mcmb	03N-13E-22	SE NW SW	PRDC	4481	----	4571	618	kb
0349	22825	Nitaro #1	MI CON. GAS CO.	50 Mcmb	03N-13E-34	NE SW NE	TMPL	4536	----	4695	600	rf
0350	26214	Halmich #3-1	CONSUMERS PWR. CO.	50 Mcmb	04N-13E-01	SW NW SE	TMPL	5141	----	5214	693	rf
0351	29024	Pellerito #1	COWEN & GORDON	50 Mcmb	04N-13E-29	NE SW NW	TMPL	5045	----	5087	671	kb

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0348	22439	Heide #1	PANHANDLE E. PPL.	50 Mcmb	05N-13E-07	NE SW SE	TMPL	5696	----	5733	795	rb
0041	33737	Grierson # 1-24	ENERGY ACQUIS.	50 Mcmb	05N-14E-24	SE NW SW	MNSM	----	----	5400	739	kb
0449	35882	USA State Norman et al #1-29	GULF OIL CORP.	51 Mnst	21N-14W-29	SW SE NW	PRDC	6706	----	7402	756	kb
0016	34277	Maidens #5-25	SHELL	51 Mnst	23N-15W-25	NE NW SW	JRDN	6365	----	6631	764	kb
0352	30502	St Springdale #5-31	MILLER BROS.	51 Mnst	24N-14W-31	NW NE	PRDC	6331	----	6360	748	kb
0353	29503	Kissel & Bahr #1	VAN RAALTE	53 Masn	17N-16W-18	SW SW SE	PRDC	5836	----	6000	718	kb
0354	18905	Sippy #17	SUPERIOR OIL	53 Masn	17N-16W-25	NE SW SW	FRNC	5952	6985	7249	725	kb
0356	32020	Schultz & Lundberg #1-35	KIRBY EXPL.	53 Masn	17N-17W-35	C NW NW	PRDC	5537	----	5635	685	kb
0355	17789	Dow-Brazos-Taggart #1	BRAZOS	53 Masn	19N-18W-27	SE NE NE	CMBR	5360	----	6617	647	kb
0027	32471	Carnagel Oil Ass. #3-30	MILLER BROTHERS	53 Masn	20N-17W-30	NW NE SE	PRDC	5433	----	5485	668	kb
0189	35259	Wager #2-12	DOME PETRO. CORP.	54 Mcst	14N-07W-12	SE SW NW	PRDC	9498	----	10137	1127	kb
0357	NO PN	??????	C & NW RR CO.	55 Mnme	38N-26W-16	--------	MNSG	----	----	994	867	gr
0323	34964	Schoenmaker #1-7	PAGE PET & KEP RES.	57 Miss	21N-06W-07	NW NW NW	PRDC	10743	----	11153	1184	kb
0187	35021	Marsh-Pollington #1-2	PETROMAX OIL & GAS	57 Miss	21N-07W-02	SW NW SE	PRDC	10734	----	10934	1188	kb
0453	36173	Kuipers "A" #1-29	CITIES SERVICE CO	57 Miss	21N-08W-29	CN NW SE	PRDC	10481	----	11650	1446	kb
0020	34376	Doornbos #5-30	JEM PETRO. CORP.	57 Miss	22N-06W-30	SE NW NW	PRDC	10627	11913	14724	1232	kb
0021	34357	Workman #10-31	JEM PETRO. CORP.	57 Miss	22N-06W-31	SW NE NE	PRDC	10738	----	11017	1206	kb
0022	34606	Visser #3-35	JEM, WOODS, JOUTEL	57 Miss	22N-06W-35	NW SE SE	PRDC	10822	----	10970	1188	kb
0185	34927	Koetje #1-25	JEM PETRO. CORP.	57 Miss	22N-07W-25	SE NW NW	PRDC	10664	----	10814	1239	kb
0018	34511	Bacon # 1-33	HOBSON PETROLEUM	57 Miss	22N-07W-33	NE SE NE	PRDC	10657	----	10812	1210	kb
0019	33963	Edwards #7-36	JEM PETRO. CORP.	57 Miss	22N-07W-36	SW NE NE	PRDC	10548	----	10810	1209	kb
0069	34078	Bruggers #3-7	JEM PETRO. CORP.	57 Miss	24N-06W-07	NE SW NE	PRDC	10153	11470	11976	1289	kb
0068	11221	Chapman #1	STURMAN, JOSEPH W.	58 Mnro	05S-10E-29	NE NE NW	GRWS	----	----	3377	597	gr
0066	25494	Shimp #1	FERGUSON & GERRISON	58 Mnro	07S-06E-16	S SE SE	POMB	2710	2791	3671	686	rf
0450	35948	Cousino #1-1	REEF PETROLEUM	58 Mnro	07S-07E-01	NW NW SW	POMB	2702	2760	3512	646	kb
0067	7702	Sancrant #1	BECK, JACOB	58 Mnro	07S-07E-19	NW SW NW	POMB	?---	?---	5495	669	gr
0009	34648	St Albert #1-10	SHELL	60 Mtmr	29N-02E-10	C SW SE	PRDC	8392	----	8455	1217	kb
0358	18666	Nelson #1	TAGGART	61 Mskg	12N-17W-20	NE SW NW	PRDC	4737	----	4858	666	kb
0359	22918	Seaman #1	MILLER, GENE, INC.	62 Nwgo	11N-13W-15	NW SE NW	PRDC	6140	----	6236	816	kb
0361	13816	Bradley #4	TURNER PETRO. CORP.	62 Nwgo	12N-13W-11	NE SW SE	PRDC	6461	----	6689	822	gr
0464	35656	Anderson #1-8	JENNINGS PETRO.	62 Nwgo	14N-11W-08	NE NE NE	PRDC	7823	----	8092	1881	kb
0360	26662	Thompson #1	THUNDER HOLLOW	62 Nwgo	15N-14W-20	SE NE SW	MNSG	6486	----	8215	829	kb
0362	32628	MI Smls Tube #1-30	WENNER PETRO.	63 Okln	01N-07E-30	SE NE NW	PRDC	5415	----	5598	920	kb
0363	19055	Gowen #1	COLLIN, C.W.	63 Okln	01N-07E-35	NW SE SE	PRDC	5340	5585	5850	1020	gr
0462	36303	Standard Industries #1-36	WINN-LOTT INC.	63 Okln	02N-08E-36	NE SE SE	PRDC	5550	----	5614	975	kb
0364	28258	Huntoon #1	TEXACO	63 Okln	04N-08E-35	C NW SW	PRDC	6323	6433	6500	1048	kb
0033	33134	Schiller #1-10	AMOCO	64 Ocna	13N-18W-10	SW NW SE	POMB	4667	5438	7240	752	kb
0365	28182	Whitte #1	CHAPMAN & TRIBAL	64 Ocna	13N-18W-13	NE NW NE	PRDC	4848	----	4991	699	kb
0366	32517	Snow #1-17	ENERGY ACQUIS.	64 Ocna	16N-15W-17	SW SE NW	PRDC	6395	----	6563	940	kb
0367	22801	Skidmore #1	PEAKE PET. & HARVEY	64 Ocna	16N-16W-11	SW NW SW	PRDC	6030	----	6062	984	kb
0368	17549	Lauber #12	CARTER OIL	64 Ocna	16N-17W-06	C SE SE	PRDC	5233	----	5382	651	kb

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0369	31338	Rau #1-21	AMOCO	65 Ogma	22N-02E-21	NW NE NW	PRDC	10654	----	10662	970	kb
0026	12898	Reinhardt Con. #1	OHIO OIL CO.	65 Ogma	22N-02E-35	SE NW NW	PRDC	10548	----	11012	903	gr
0025	28456	A.B.G. Hunt Club #1	AMOCO	65 Ogma	23N-03E-28	NW NE	UNCF	-----	----	10193	878	kb
0024	25099	St Foster #1	BRAZOS	65 Ogma	24N-02E-28	SW SE SE	ECLR	10506	11669	12996	1476	kb
0029	34558	Fruedenburg #1-31	JEM PETRO. CORP.	67 Oseo	17N-08W-31	SE NE NE	TMPL	9596	10483	10858	1117	kb
0028	34536	McCormick #2-27	JEM PETRO. CORP.	67 Oseo	18N-08W-27	SW SE NW	PRDC	9724	----	10818	1055	kb
0370	12802	Stedman #3	OHIO OIL CO.	67 Oseo	18N-10W-29	C NW NW	PRDC	8865	----	8917	1133	gr
0403	35482	Robinson #1-31	HUNT ENERGY	67 Oseo	19N-07W-31	SE SE NE	PRDC	10337	----	11305	1116	kb
0014	34494	Consumers Pwr. #1	HUNT ENERGY	68 Oscd	25N-02E-10	NE NE SW	PRDC	10134	11171	11194	1176	kb
0015	34070	USA Big Creek #1	HUNT ENERGY	68 Oscd	25N-02E-14	NE NE SW	TMPL	9990	11028	11691	1179	kb
0371	25873	Lake Horicon Corp. #1	SIMPSON, C. J.	69 Otsg	29N-04W-02	C NW NW	PRDC	8135	----	8372	1413	kb
0313	35113	Johannesburg Mfg. #3-16	W.BAY-WAINOCO	69 Otsg	30N-01W-16	SW SW SE	PRDC	7838	----	8710	1374	kb
0452	35922	Dowker et al #2-21	REEF-WEST BAY-WAINCO	69 Otsg	30N-01W-21	NW SW SE	PRDC	7899	----	8183	1367	kb
0373	BD	Brine Disposal #3	PARKE DAVIS & CO.	70 Otwa	05N-15W-20	SW SW SW	MNSM	3929	4468	5945	604	kb
0034	1DIS	Heinz WDW #2	HEINZ, H.J.	70 Otwa	05N-15W-30	SW SW SE	POMB	3904	4421	6221	619	kb
0035	34268	Hirdes #1-1	OMNI PETROLEUM	70 Otwa	06N-15W-01	NW NE SW	PRDC	4448	----	5066	638	kb
0374	25800	Fenske #4-A	SWANSON & BABCOCK	70 Otwa	07N-13W-34	NW SE NW	PRDC	4865	----	5126	654	kb
0182	34885	Umlor #1-3	GULF	70 Otwa	08N-13W-03	NW NW NE	PRDC	5643	6429	7250	891	kb
0372	537	Moe #1	MI PETRO. CO.	70 Otwa	09N-13W-06	SW E SE	TMPL	5470	6171	6310	704	gr
0340	34999	St Allis #2-30	SHELL	71 PsIl	33N-02E-30	NE NW NE	PRDC	5804	----	5954	829	kb
0311	35085	Moll #1-14	JENNINGS PETRO.	71 PsIl	33N-03E-14	SW NW SW	PRDC	5702	6250	6667	903	kb
0008	29372	Taratuta #1-13	SHELL	71 PsIl	33N-05E-13	SW NW SE	POMB	5262	5748	6738	776	kb
0376	24999	Weide #1	FAIN-PORTER DRLG.	71 PsIl	33N-07E-33	C SW NW	PRDC	5358	----	5458	815	kb
0375	22638	Sellke #1	LINDSAY, FORREST	71 PsIl	34N-05E-20	NE SE SW	PRDC	5087	----	5135	844	kb
0007	27199	Draysey #1	PAN AMERICAN PET.	71 PsIl	35N-02E-29	SE SE SE	FRNC	4685	5168	5940	809	kb
0377	27725	St Ocqueoc #1	MCCLURE	71 PsIl	35N-03E-24	SE NW NW	PRDC	4616	----	4737	730	kb
0378	20194	Fee #1	MI LS DIV.,US STEEL	71 PsIl	35N-06E-31	NE SW NE	PRDC	4391	----	4463	669	kb
0023	34537	Dalrymple #1-16	JEM PETRO. CORP.	72 Rscm	22N-04W-16	NW NE SE	PRDC	11012	----	12260	1141	kb
0047	25780	Puzzuoli #1	BERNHARDT O & G	74 StCl	02N-16E-17	NE NE NE	POMB	----	----	4186	579	rf
0385	23796	Bidal-Faucher-Levrau #1	COLLIN, C.W.	74 StCl	03N-15E-10	SE NE SW	FRNC	----	----	4494	595	rf
0043	30376	Osterland #1-14	MI CON. GAS CO.	74 StCl	03N-15E-14	NE NE NE	POMB	----	----	4550	603	kb
0042	139BD	Consumers Pwr. BD#1	CONSUMERS PWR. CO.	74 StCl	04N-15E-31	SW SW SE	POMB	----	----	4627	616	kb
0387	22002	Roney #1	PANHANDLE E. PPL.	74 StCl	05N-16E-11	NE SE SE	ECLR	----	----	4798	629	rf
0044	196	Hurst #1	SAINT CLAIR O & G	74 StCl	05N-16E-26	SE NW	POMB	----	----	4770	620	gr
0045	151BD	Consumers Pwr #1-7 BDW	CONSUMERS PWR. CO.	74 StCl	05N-17E-07	CN NW NW	POMB	----	----	4773	638	kb
0046	152BD	Consumers Pwr #2-7 BDW	CONSUMERS PWR. CO.	74 StCl	05N-17E-07	NE NE NW	POMB	----	----	4702	632	kb
0388	26086	Conrad #1	N. AMER. DRLG.	74 StCl	06N-15E-01	NW NE NE	ECLR	----	----	5496	709	kb
0386	25024	Baldwin #1	GOLL, GRAVES,MECHLI.	74 StCl	06N-16E-06	C NW NW	ECLR	----	----	5492	681	rf
0463	24183	Walters #1	SIMPSON, C. J.	75 StJo	06S-09W-29	NE NE NE	PRDC	3142	----	3175	862	kb
0061	31335	Cupp #1-11	MARATHON	75 StJo	06S-10W-11	SE SE SE	POMB	3224	3446	5283	892	kb
0391	1244	Fee #1	MAHNKE, LILLIAN	75 StJo	06S-11W-02	NE SW NW	TMPL	3065	3350	3520	833	gr
0392	28005	Cook #1	NATIONAL INDUST	75 StJo	06S-11W-14	C SE SW	PRDC	3060	----	3130	838	kb
0393	31708	Barnes #1-23	AMOCO	75 StJo	06S-11W-23	NE SE NE	PRDC	3048	----	3069	844	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	Elevation	KB/RF/GR
0394	21155	Thunder #1	GRIGG & MARSHALL	75 StJo	06S-11W-27	NW NE NE	PRDC	2978	----	3094	823	kb
0395	31681	Dunithan #1-34	AMOCO	75 StJo	06S-11W-34	NW SW SE	PRDC	2916	----	2999	829	kb
0430	23839	Reed #1	SIMPSON, C. J.	75 StJo	07S-09W-15	C NE NW	PRDC	3085	----	3134	875	kb
0380	25357	Hoppinthal #1	HUMBLE OIL	76 Snlc	09N-15E-16	C NE NE	PRDC	6680	----	6784	769	kb
0381	26480	Spencer #1	HALLWELL, INC.	76 Snlc	09N-15E-27	NW NW NE	PRDC	6245	----	6503	759	kb
0379	25939	Hontar #1	SIMPSON, C. J.	76 Snlc	10N-15E-09	C SE SE	PRDC	6663	----	6792	775	kb
0038	33999	Woodruff #1-19	MID-AMERICA O & G	76 Snlc	10N-15E-19	NE NW NE	POMB	7108	7560	8512	765	kb
0448	35779	Frostic #1-30	TRAVERSE OIL CO.	76 Snlc	11N-15E-30	SE SE SE	ECLR	6783	7306	7824	775	kb
0070	30974	Hewitt & Shadd #1-20	MCCLURE & M.N.R.	76 Snlc	12N-15E-20	C SW SE	POMB	7369	8055	8975	785	kb
0382	22379	Ferris #1	LEE, C.A.	78 Siwc	05N-02E-05	C SE NE	PRDC	6725	----	6815	856	kb
0383	23376	Dysinger #1	HODSON O & G	78 Siwc	05N-02E-22	C SW SW	PRDC	7232	----	7310	905	kb
0384	30727	Hasselbring #1-5	MI OIL CO.	78 Siwc	06N-01E-05	N N N	PRDC	7510	----	7662	783	kb
0036	23890	Sattelberg #1	SIMPSON, C. J. & SUN	79 Tscl	13N-09E-08	NE NE NE	PRDC	9922	----	10130	678	kb
0396	25609	Novesta Twp. #1	SIMPSON, C. J.	79 Tscl	13N-11E-16	C SW SW	PRDC	9149	----	9296	738	kb
0397	28590	Jolicoeur #1	MILLER BROS.	80 VnBn	01S-14W-16	NE NW NE	PRDC	3413	----	3422	764	kb
0401	31018	Lula #1	MOBIL	80 VnBn	02S-14W-27	SW SW SE	PRDC	3210	----	3265	711	kb
0400	25706	Reed #1	TRI-COUNTY DEVEL.	80 VnBn	03S-14W-35	SE NW NE	FRNC	3043	3365	3678	748	rf
0398	23524	Kern #1	TURTLE DRLG. CO.	80 VnBn	04S-14W-34	NW SE NE	PRDC	3052	----	3117	922	kb
0399	27501	Daly #1	MCCLURE	80 VnBn	04S-16W-30	W E SW	PRDC	2681	----	2770	813	kb
0410	19384	Cooper #1	OHIO OIL CO.	81 Wash	01S-03E-07	SW SW SE	PRDC	5048	----	5156	938	gr
0411	24161	Wagner & Slocum #1	SIMPSON & GULF	81 Wash	01S-03E-22	SW SW NW	PRDC	5094	----	5159	961	kb
0050	34223	Worrell #1-28	HUNT ENERGY	81 Wash	01S-06E-28	SE SE SW	POMB	5066	5300	6325	942	kb
0051	34382	Cavanaugh #1-33	HUNT ENERGY	81 Wash	01S-06E-33	NE NE SW	PRDC	5024	----	5159	978	kb
0413	25759	Bulman #1	ROVSEK, A. E.	81 Wash	01S-07E-02	NE NE SW	PRDC	5260	----	5377	996	kb
0052	10141	Voss #1	CALVIN & ASSOC.	81 Wash	01S-07E-16	SW NW NE	POMB	5215	5455	6410	915	gr
0053	10792	Troy-Roddenberry #1	CHANMES, I. C.	81 Wash	01S-07E-27	NE SE NE	POMB	5019	5164	6094	886	gr
0420	24396	Goers #1	PEAKE PETRO.	81 Wash	02S-03E-25	NW SW NE	PRDC	4720	----	4788	939	rf
0409	19891	Wenk #1	DEGENTHER, P.K.	81 Wash	02S-04E-33	SE SW SW	PRDC	4625	----	4758	918	gr
0054	11341	Meinzinger #1	CALVIN & ASSOC.	81 Wash	02S-07E-12	SE NE NW	POMB	4696	4867?	5692	818	gr
0419	25714	Jorgensen #1	ROVSEK, A. E.	81 Wash	02S-07E-26	NE NW NE	POMB	4875	----	5002	782	kb
0417	28911	Jacobs #1	PETROMIN	81 Wash	03S-03E-20	NE SE NE	TMPL	4908	----	5275	995	kb
0418	28990	Widmayer #1-A	PETROMIN	81 Wash	03S-03E-21	W SE SE	TMPL	4862	5145	5241	980	kb
0406	28548	Buss & Haab #1	MAJESKE	81 Wash	03S-04E-08	NW NE NW	PRDC	4550	----	4601	971	kb
0407	25607	Meyer #1	SUN OIL	81 Wash	03S-04E-16	NW SE SE	PRDC	4465	----	4524	974	kb
0408	27099	Hoener #1	SUN OIL	81 Wash	03S-04E-21	NE SW SE	PRDC	4445	----	4502	1002	kb
0422	25482	Wabash Railroad #1	ROVSEK, A. E.	81 Wash	03S-07E-24	SE SE NW	PRDC	3885	----	3959	694	rf
0412	25950	Trolz #1	TROLZ & ASSOC.	81 Wash	04S-03E-20	NW SE SW	PRDC	4568	----	4640	1025	kb
0404	26204	Allen #1-A	BESKO PETRO.	81 Wash	04S-04E-27	SW SW NW	TMPL	3900	3995	4039	864	rf
0405	23380	Bohnenstiehl #1	PEAKE PETRO.	81 Wash	04S-04E-34	SW NW NE	PRDC	3878	----	3951	919	rf
0414	23921	Marion #GG-1	GOOD & GOOD	81 Wash	04S-05E-14	NW NW SE	TMPL	3763	3819	3868	795	rf
0415	24714	Schowacko #GG-1	GOOD & GOOD	81 Wash	04S-05E-16	NE NE NW	TMPL	3782	3850	3940	864	rf
0416	26856	Schwocho #1	LEONARD OIL	81 Wash	04S-05E-17	SE SE SE	TMPL	3802	3875	3934	862	rf
0421	22292	Wanty & Edwards #1	BASIN OIL	81 Wash	04S-06E-28	NE NE SE	PRDC	3584	----	3637	721	rf

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
0426	19496	DEHOCO #3	CONSUMERS POWER CO.	82 Wyne	01S-08E-17	SW NE SE	ECLR	4749	4830	5483	900	kb
0427	19329	George #1	TAGGART	82 Wyne	01S-08E-18	SW NE NE	DRBC	4829	4962	5130	861	rf
0424	NOP#	Ford Well	??????	82 Wyne	02S-10E-22	NE NW SE	TMPL	----	----	4050	612	gr
0423	25560	Ford Motor Co. #1	PANHANDLE E. PPL.	82 Wyne	02s-11E-19	PC#33	ECLR	----	----	3917	588	gr
0055	10430	Theisen #1	CALVIN & ASSOC.	82 Wyne	04S-09E-16	NE SE SE	POMB	3322	3354	4046	625	gr
0056	146BD	Marathon Wdhvn BDW #1	MARATHON	82 Wyne	04S-10E-22	N SE	POMB	----	----	3752	609	kb
0425	NO P#	Penn. Salt Co. #14	????????	82 Wyne	04S-11E-05		TMPL	----	----	3368	600	gr
0017	34612	Benson #1-14	JEM PETRO. CORP.	83 Wxfd	21N-09W-14	NW SW SW	PRDC	10236	----	10440	1412	kb
0225	35099	St-Liberty #1-18	JEM PETRO. CORP.	83 Wxfd	24N-09W-18	SW SW SW	PRDC	8910	----	10100	1022	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	942	Witterau #1	ELDREDGE, W.E.	11 Bern	08S-21W-10	SE NW SE	STPR	----	----	1719	667	gr
nom	27603	Green & Groholski	MANNES, ROBERT J.	12 Bran	05S-06W-12	SE SE SE	PRDC	3880	----	3980	984	kb
nom	26954	King #1	FULK, PERRY	12 Bran	05S-06W-13	NE SW NE	PRDC	3874	----	4010	988	kb
nom	30766	Russel #1-6	KIRFB, C.P.C.,QUINT.	12 Bran	05S-08W-06	SW SW SW	PRDC	3534	----	3610	891	kb
nom	26719	Liskey #1	HOUSEKNECHT OIL	12 Bran	06S-05W-05	C SW NE	PRDC	3812	----	4100	1033	kb
nom	31968	Worden Brothers #1-2	REEF	12 Bran	06S-05W-02	NE NW NW	PRDC	3812	----	3870	1006	kb
nom	31407	Stetler #1-33	MARATHON	12 Bran	06S-05W-33	NW NE	PRDC	3674	----	3717	1049	kb
nom	26478	Ransburg #1	MOBIL	12 Bran	06S-05W-36	C NE SW	PRDC	3675	----	3760	1075	kb
nom	26432	Swain #1	MOBIL	12 Bran	06S-05W-36	C NE NE	PRDC	3685	----	3751	1061	kb
nom	21519	Juday #1	MCCLURE	12 Bran	06S-08W-29	NW NW SW	STPR	----	----	3231	866	kb
nom	21433	Adolph #1	MCCLURE	12 Bran	07S-06W-02	NW SW NW	PRDC	3560	----	3574	1026	rf
nom	24647	Walker #1	TEXACO	12 Bran	07S-06W-05	SE SE SW	PRDC	3482	----	3600	997	kb
nom	25853	Smith #1	ALGONQUIN PET. CO.	12 Bran	07S-06W-08	SE SW SE	PRDC	3438	----	3549	988	kb
nom	28536	Van Voorhis #1	OCCIDENTAL	12 Bran	08S-05W-04	NW SE NE	PRDC	3474	----	3515	1051	kb
nom	23427	Lake #1	COWEN, M. T.	13 Calh	01S-04W-33	SE SE SW	PRDC	4894	----	4954	985	kb
nom	26737	Hensley #1	ROGER THE CHEF	13 Calh	01S-05W-05	SE SW SE	PRDC	4956	----	5082	942	rf
nom	22489	Murphy & Altenhein #1	SIMPSON, C.J.	13 Calh	01S-05W-06	SE NE NW	PRDC	4974	----	5041	922	kb
nom	25226	Brunson-Velting #1	TROLZ & ASSOC.	13 Calh	01S-05W-08	NW SE SE	PRDC	4958	----	5000	943	kb
nom	22397	Wood #1	TRENTON PETRO.	13 Calh	01S-05W-09	NW SW NE	TMPL	4966	----	5098	947	kb
nom	29472	Clark #1-12	MGU,MASK,MARKEL,WOOD	13 Calh	01S-05W-12	SW SW SW	PRDC	4978	----	5006	961	kb
nom	30468	Midlam #1	MIDLAM, Earl R.	13 Calh	01S-05W-13	SE NW SW	FRNC	4945	----	6000	986	kb
nom	23207	Walter #1	FULK, PERRY	13 Calh	01S-05W-15	SE SE SW	PRDC	4877	----	4934	933	kb
nom	22380	Haas #1	FULK, PERRY	13 Calh	01S-05W-15	SE SW SE	PRDC	4906	----	4967	956	kb
nom	22578	Walter #1	SIMPSON, C.J.	13 Calh	01S-05W-15	SE SW SW	PRDC	4871	----	4953	937	kb
nom	23637	Sellen #2	MASK,MARKEL,WOOD	13 Calh	01S-05W-16	NW NW SE	PRDC	4928	----	4977	969	kb
nom	29152	Hogle #1	MGU,MASK,MARKEL,WOOD	13 Calh	01S-05W-16	NE NW SW	PRDC	4918	----	4976	970	kb
nom	28702	Velliquette #1	MOBIL	13 Calh	01S-05W-17	SE NE SE	STPR	----	----	4896	931	kb
nom	22108	Dunlap #1	KELLY, J.O.	13 Calh	01S-05W-22	SE NW SE	PRDC	4862	----	4912	942	kb
nom	22343	Dunlap #A-1	KELLY, J.O.	13 Calh	01S-05W-22	SE SE SE	STPR	----	----	4852	935	kb
nom	31143	Walters-Lavoy #1-22	LORENZ, ROBERT	13 Calh	01S-05W-22	NW SW NE	STPR	----	----	4932	958	kb
nom	27061	Kiber #1-A	MASK,MARKEL,WOOD	13 Calh	01S-05W-22	SE NE SW	STPR	----	----	4867	950	kb
nom	22903	Henry #1	SUN OIL	13 Calh	01S-05W-23	SE SW NW	PRDC	4915	----	4925	942	kb
nom	27493	Alexander #1	CLAY CO. PROD. CO.	13 Calh	01S-05W-25	SE SE SW	STPR	----	----	4860	959	kb
nom	27536	Midlam #3	FULK, PERRY	13 Calh	01S-05W-25	SE NW SW	PRDC	4851	----	4865	949	kb
nom	28102	Alexander #1	TROLZ & ASSOC.	13 Calh	01S-05W-25	SE SE SW	STPR	----	----	4860	959	kb
nom	27197	Midlam #A-1	FULK, PERRY	13 Calh	01S-05W-26	SE SE NE	PRDC	4874	----	4886	965	kb
nom	22440	Marshall #1	FULK, PERRY	13 Calh	01S-05W-26	NW NE SW	PRDC	4847	----	4900	946	kb
nom	23020	Marshall #A-1	FULK, PERRY	13 Calh	01S-05W-26	NW SW SE	PRDC	4870	----	4903	947	kb
nom	23896	Woods #1	FULK, PERRY	13 Calh	01S-05W-26	NW SE SE	PRDC	4834	----	4897	948	kb
nom	27135	Woods #2-A	FULK, PERRY	13 Calh	01S-05W-26	NE NE SE	STPR	----	----	4860	950	kb
nom	22187	Ripley #1	FULK, PERRY	13 Calh	01S-05W-26	NW SE NW	PRDC	4894	----	4910	948	kb
nom	26929	Williams-Jessup #1-C	FULK, PERRY	13 Calh	01S-05W-26	NE SW NW	STPR	----	----	4850	940	kb
nom	26115	Jessup #1	KEILLER & MASKENY	13 Calh	01S-05W-26	NW NW NW	PRDC	4829	----	4840	936	kb
nom	24852	Sundberb #1	LINCOLN ROCK CORP.	13 Calh	01S-05W-26	SW NE NW	PRDC	4846	----	4887	944	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	22783	Jessup-Williams #1	MT. CARMEL DRLG.	13 Calh	01S-05W-26	SE SW NW	PRDC	4857	----	4895	941	kb
nom	22386	Sundberg #1	SUN OIL	13 Calh	01S-05W-26	SE NE NW	PRDC	4855	----	4901	947	kb
nom	22383	Ripley #2	WOLVERINE G & O	13 Calh	01S-05W-26	SE SE NW	PRDC	4883	----	4907	959	kb
nom	22714	Ripley #2-A	WOLVERINE G & O	13 Calh	01S-05W-26	SE SE NW	PRDC	4891	----	4902	953	kb
nom	27560	Jessup & Nail #1	FORTUNA OIL	13 Calh	01S-05W-27	E NE NE	PRDC	4812	----	4825	927	rf
nom	22835	Atkins #1	FULK OIL CO.	13 Calh	01S-05W-35	NW SE SE	PRDC	4806	----	4866	960	kb
nom	27414	Booten #1	PATRICK & MASKNEY	13 Calh	01S-05W-35	NW NE NE	PRDC	4842	----	4875	955	kb
nom	22706	Baggerly #1	BIFFLE, NED OIL INT.	13 Calh	01S-07W-12	S SW SE	STPR	----	----	4626	859	kb
nom	27002	Cruse #1	KELLY, J.O.	13 Calh	02S-04W-07	SE NW NE	PRDC	4742	----	4777	929	kb
nom	23553	Cruse & Brandt #1	RUDMAN, M. B.	13 Calh	02S-04W-07	C S NW	PRDC	4784	----	4815	932	kb
nom	27381	Ball #2	TROLZ & ASSOC.	13 Calh	02S-04W-07	SW SW SE	PRDC	4751	----	4765	962	kb
nom	27289	Cooper #1	TROLZ & ASSOC.	13 Calh	02S-04W-07	SE SE SE	PRDC	4716	----	4730	928	kb
nom	32720	Collier #1-12	SCOTT, DON DRLG.	13 Calh	02S-04W-12	NW SW NE	STPR	----	----	4923	1000	kb
nom	23757	Miller-Winter #1	CUMMINS, J.C.	13 Calh	02S-04W-19	SE NE SE	PRDC	4709	----	4760	985	kb
nom	22893	Ott-St #1	OHIO OIL CO.	13 Calh	02S-04W-20	NW SW NW	PRDC	4780	----	4791	996	kb
nom	26203	Davis #1	COWEN, M. T.	13 Calh	02S-04W-21	SE SE NE	PRDC	4740	----	4800	963	kb
nom	22690	Vaughn #1	RICE ENG. & OPER.	13 Calh	02S-04W-33	NW SW SE	PRDC	4670	----	4684	947	kb
nom	23510	Albion & Drum #1	RUDMAN, M. B.	13 Calh	02S-04W-33	SE SW NE	PRDC	4611	----	4674	961	kb
nom	22966	Torrey-Boldt-Hartung #1	RUDMAN, M. B.	13 Calh	02S-04W-33	NW NE SW	PRDC	4614	----	4676	945	kb
nom	23369	Behling & Albion #1-B	ROVSEK & VOLK	13 Calh	02S-04W-34	SE SW SW	PRDC	4580	----	4675	948	kb
nom	23370	Behling & Albion #2-B	ROVSEK & VOLK	13 Calh	02S-04W-34	NW SW SW	PRDC	4586	----	4619	947	kb
nom	22723	Scott #1	FULK OIL CO.	13 Calh	02S-05W-01	SE NW NW	PRDC	4868	----	4877	984	kb
nom	25054	Hoffman #1	JENKINS & WOODRUFF	13 Calh	02S-05W-01	NW NW SE	PRDC	4848	----	4884	1000	kb
nom	22683	Kilburn #1	WHITMER	13 Calh	02S-05W-11	SE NE NE	PRDC	4739	----	4742	969	kb
nom	23680	Fountain #1	CUMMINS, J.C.	13 Calh	02S-05W-12	SE NE SW	PRDC	4698	----	4751	923	kb
nom	22880	Fountain #1	PALMER, W.C.	13 Calh	02S-05W-12	NW NE NE	PRDC	4800	----	4835	943	kb
nom	23746	Fountain #1	TWIN OIL CO.	13 Calh	02S-05W-12	NW SE NW	PRDC	4756	----	4802	962	kb
nom	23983	Young #1	COWEN, M. T.	13 Calh	02S-05W-13	NW SE SE	PRDC	4681	----	4731	933	kb
nom	22415	Young #1	MCCLURE O & FULK, P	13 Calh	02S-05W-13	SE SE SE	PRDC	4734	----	4740	954	rf
nom	23807	Van Elst #1	PETROSONIC	13 Calh	02S-05W-30	SW NE NE	PRDC	4539	----	4547	936	kb
nom	23730	Van Elst #1	ZAHN, H.J.	13 Calh	02S-05W-30	SW NE NE	PRDC	4539	----	4547	936	kb
nom	21757	Woods #1	BARTLETT, BYRON A.	13 Calh	02S-06W-13	SW NW SE	STPR	----	----	4570	968	kb
nom	26689	Food City Pickle #1	MASK, MARKEL, WOOD	13 Calh	02S-06W-17	SE SE NE	PRDC	4492	----	4562	951	kb
nom	22873	Behling #4	ROVSEK & VOLK	13 Calh	03S-04W-04	SE SW NE	PRDC	4602	----	4690	982	kb
nom	24232	Behling #1	ROVSEK, A. E.	13 Calh	03S-04W-04	NE SW NE	PRDC	4582	----	4643	982	kb
nom	22882	Sovers #1	FRONTIER PET.	13 Calh	03S-04W-16	SE NE NE	PRDC	4595	----	4623	1040	kb
nom	27373	Stephenson #1	COLLINS BROS.	13 Calh	03S-04W-22	NW NE NW	PRDC	4504	----	4540	1006	kb
nom	21356	Farley-Rosenau #1	CARTER OIL	13 Calh	03S-04W-23	NW SW NW	GLND STPR	----	----	4522	1021	kb
nom	22658	Rosenau #1	TURTLE DRLG. CO.	13 Calh	03S-04W-23	SE NE SW	PRDC	4495	----	4548	1012	kb
nom	23586	Rosenau #1	CHAPMAN, C. H.	13 Calh	03S-04W-26	NW NW NW	PRDC	4528	----	4569	1044	kb
nom	26184	Ackley-State #1	NANCO INC.	13 Calh	03S-04W-34	SE SW SW	PRDC	4392	----	4399	1009	kb
nom	25581	Mymachod #1	NANCO INC.	13 Calh	03S-04W-34	NW SW SE	PRDC	4426	----	4456	1018	kb
nom	23103	Vandenberg #1	LEITCH, EDMOND T.	13 Calh	03S-04W-36	SE NE SW	PRDC	4443	----	4486	1034	rf
nom	24353	Huepenbecker #1	CALIFORNIA CO.	13 Calh	03S-05W-30	C SW SE	PRDC	4253	----	4305	981	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	Elevation	KB/RF/GR
nom	32682	Hayes #1-34	CONSUMERS PWR. CO.	13 Calh	03S-05W-34	S SW SE	PRDC	4292	----	4310	991	kb
nom	28179	Schultz #1	MUTCH, J.O.	13 Calh	03S-07W-15	NW NW SE	PRDC	4153	----	4157	931	rf
nom	22874	Francisco #1	WHITEHALL OIL, INC.	13 Calh	03S-07W-23	C SE SE	PRDC	4095	----	4180	921	kb
nom	23635	Case #1	CITIES SERVICE CO.	13 Calh	03S-07W-26	C SW SW	PRDC	4063	----	4141	946	kb
nom	23027	Rosenau et al #1	HATHCOCK, LEE A.	13 Calh	04S-04W-01	NW NE NE	PRDC	4452	----	4519	1050	kb
nom	23559	Rosenau et al #2	HATHCOCK, LEE A.	13 Calh	04S-04W-01	SW NE NE	PRDC	----	----	4332	1059	kb
nom	23114	Trader #1	JACKSON, F. R.	13 Calh	04S-04W-01	NW SE SW	PRDC	4407	----	4470	1030	kb
nom	22923	Nietzke #1	MARATHON	13 Calh	04S-04W-01	SE NW NW	PRDC	4492	----	4530	1074	kb
nom	22543	Rosenau #A-1	RICE ENG. & OPER.	13 Calh	04S-04W-01	NW NE	PRDC	4480	----	4501	1032	kb
nom	23608	Trader #1	TROLZ & ASSOC.	13 Calh	04S-04W-01	SE NE SW	PRDC	4415	----	4481	1038	kb
nom	22007	Horn #1	FULK, PERRY	13 Calh	04S-04W-13	NW NE NW	PRDC	4301	----	4398	998	kb
nom	23551	Litterbrant et al #1	TURTLE DRLG. CO.	13 Calh	04S-04W-22	NW NE SE	PRDC	4248	----	4329	1025	kb
nom	31634	Jones #1	KEG OIL CO.	13 Calh	04S-04W-26	SE SW SW	PRDC	4200	----	4274	1018	kb
nom	29151	McCullouch et al #1-31	MCCULLOCH-IDS-ANSCH.	13 Calh	04S-04W-31	C SE SE	PRDC	4123	----	4175	1032	kb
nom	22500	Hamilton #1	ROBINS, K.O.	13 Calh	04S-04W-32	NW NW SW	PRDC	4127	----	4215	1023	kb
nom	23065	Hamilton #2	ROBINS, K.O.	13 Calh	04S-04W-32	NE NE SW	PRDC	4118	----	4158	1009	kb
nom	29630	Hunsicker-Taylor #1	CONSUMERS & QUINTANA	13 Calh	04S-05W-31	SE SW SW	PRDC	3992	----	4154	975	kb
nom	23753	Willis et al #1	MCCLURE	13 Calh	04S-06W-17	SE SW NW	PRDC	4044	----	4150	1004	kb
nom	27758	Chaffee #1	M.I.O. EXPL.	13 Calh	04S-07W-04	SE SE SE	PRDC	3927	----	3997	920	kb
nom	22620	Burdick #1	PERRY, C.A.	13 Calh	04S-07W-04	NE NE NE	PRDC	3983	----	4039	920	kb
nom	19591	Gallihugh #1	OHIO OIL CO.	13 Calh	04S-07W-05	NW SW NE	PRDC	3962	----	4010	939	kb
nom	23959	Hartsell #1	KEHLET, F. W.	14 Cass	05S-14W-26	NW NW NW	PRDC	2963	----	2978	954	kb
nom	35967	Hawkes & Adames #1-28	HALLWELL, INC.	14 Cass	07S-14W-28	SE SE SW	MNSM	----	----	2998	929	kb
nom	NO P#	Brimley St Park Well	?????	17 Chip	46N-02W-04	N	OMBR	----	----	300	????	?
nom	NO P#	Sault Ste. Marie Well	CADILLAC LUMB & CHEM	17 Chip	47N-01E	NE	OMBR	----	----	998	????	?
nom	22487	Hickok #1	KELLY OIL	23 Eatn	01N-05W-30	NW NW NW	PRDC	5012	----	5080	889	kb
nom	27628	Koch #1	PERRY, C.A. & SON	23 Eatn	01N-06W-25	NW NW SW	PRDC	5006	----	5020	921	kb
nom	28902	LeSeney #1	BAG MINING CO.	23 Eatn	02N-04W-15	NE NE SE	STPR	----	----	5704	943	kb
nom	22945	Tenis #1	MOCO, THE	23 Eatn	03N-06W-22	CS SW SW	STPR	----	----	5612	896	rf
nom	28212	White & Burns #1	ATLANTIC INLAND OIL	24 Emet	37N-04W-35	SE SE NW	STPR	----	----	3945	714	kb
nom	24079	Hutchinson #1	DUGGER,HERRING&WELLS	25 Gnec	09N-08E-04	E SW SW	STPR	----	----	8525	837	kb
nom	26306	Wilkes #1	LEIGHTON, R.O.	30 Hils	05S-01W-05	NW NW SW	PRDC	4346	----	4379	1077	kb
nom	26974	Ferris #1	HANNERS DRLG. CO.	30 Hils	05S-01W-11	NW SW SE	PRDC	4032	----	4366	1074	rf
nom	25574	Sprangel #1	BELL & GAULT	30 Hils	05S-01W-22	NE SE NW	PRDC	4275	----	4321	1071	rf
nom	22749	Fulford #1	RUDMAN & MCCLURE	30 Hils	05S-01W-35	NW NW SW	PRDC	4210	----	4284	1120	kb
nom	27147	Rynex #1	BELL & GAULT	30 Hils	05S-02W-02	SW NW SW	PRDC	4355	----	4409	1115	rf
nom	21940	Campenhou #1	COLLIN, C. W.	30 Hils	05S-02W-03	NW SE SW	PRDC	4316	----	4366	1087	kb
nom	28271	Rumsey & Emerson #1	OCCIDENTAL	30 Hils	05S-02W-04	NE NE NE	PRDC	4336	----	4430	1081	kb
nom	26891	Gabbard #1	MCCLURE	30 Hils	05S-02W-10	NW NE NE	PRDC	4333	----	4462	1115	kb
nom	24588	Baker #1	COVEY & NULL	30 Hils	05S-02W-18	SE SE SE	STPR	----	----	4263	1145	kb
nom	24719	Baker #1	HATHCOCK, LEE A.	30 Hils	05S-02W-18	W SW	PRDC	4232	----	4274	1140	rf

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	22499	Finegan #1	BAUER, J. E.	30 Hils	05S-02W-19	NW SW NW	STPR	----	----	4212	1130	kb
nom	22528	Godfrey #1	FULK, PERRY	30 Hils	05S-02W-19	SE SW SE	PRDC	4255	----	4302	1177	kb
nom	24854	Adam #1	MI OIL CO.	30 Hils	05S-02W-19	NW SW NE	PRDC	4245	----	4301	1140	kb
nom	25310	Adam #1	NO. AMER. DRLG. CO.	30 Hils	05S-02W-19	NW SW SE	PRDC	4204	----	4247	1138	rf
nom	23371	Denning #1	ROVSEK, A. E.	30 Hils	05S-02W-20	NW NW SE	PRDC	4270	----	4326	1190	kb
nom	24841	Berlew #1	ROVSEK, A. E.	30 Hils	05S-02W-20	NW SW NE	PRDC	4248	----	4305	1167	kb
nom	22183	Sterling #A-1	HANNERS OIL	30 Hils	05S-02W-24	SW SE NE	PRDC	4318	----	4336	1129	rf
nom	25271	Taylor #1	BELL & GAULT	30 Hils	05S-02W-27	SE SW NW	PRDC	4241	----	4449	1164	rf
nom	23882	Kesselring #1	COWEN, M. T.	30 Hils	05S-02W-30	NW NE SE	PRDC	4264	----	4341	1203	kb
nom	25446	Bain #1	MCCLURE	30 Hils	05S-02W-30	SE NE NE	PRDC	4294	----	4312	1193	rf
nom	29291	Weyer #1	ROBINS, K.O.	30 Hils	05S-02W-30	NW SE NE	PRDC	4243	----	4247	1197	rf
nom	23803	Smith #1	RUDA, A. L.	30 Hils	05S-02W-30	SW SW	PRDC	4210	----	4216	1188	rf
nom	24787	Kesselring #2	HOUSEKNECHT OIL	30 Hils	05S-02W-31	SE SW NE	PRDC	4211	----	4250	1183	kb
nom	25487	Kesselring #6	HOUSEKNECHT OIL	30 Hils	05S-02W-31	NW SE SE	PRDC	4228	----	4252	1194	kb
nom	24551	Houseknecht #1	JENKINS & WOODRUFF	30 Hils	05S-02W-31	NW SE NW	PRDC	4164	----	4216	1182	kb
nom	24658	Houseknecht #2	JENKINS & WOODRUFF	30 Hils	05S-02W-31	C W NW	PRDC	4148	----	4205	1164	rf
nom	22876	Hergert & Schlabach #1	RODMAN, M. B.	30 Hils	05S-02W-31	S W SW	PRDC	4132	----	4200	1161	kb
nom	23282	Hergert #1	TROLZ & ASSOC	30 Hils	05S-02W-31	NW NE SW	PRDC	4128	----	4187	1168	rf
nom	22392	Stauffer #1	CASSIDY, SAM	30 Hils	05S-02W-32	NW SE NE	PRDC	4205	----	4265	1181	kb
nom	24966	Milliman-Sanderson #1	HOUSEKNECHT OIL	30 Hils	05S-02W-32	SE NW NW	PRDC	4212	----	4241	1171	kb
nom	24929	Bumpas #1	MARATHON	30 Hils	05S-02W-32	NW SE SW	PRDC	4162	----	4213	1162	kb
nom	26959	Brown #1	O'NEILL & ROWLSON	30 Hils	05S-02W-32	SE NE NE	PRDC	4195	----	4205	1161	kb
nom	25391	Griffiths #1	PARAMONT PETRO.	30 Hils	05S-02W-32	NW NW SE	PRDC	4176	----	4199	1171	kb
nom	22431	Hammons #1	SIMPSON, C.J.	30 Hils	05S-02W-32	SE SE SE	PRDC	4186	----	4235	1167	rf
nom	24688	Hammons #2	TROLZ & ASSOC	30 Hils	05S-02W-32	NW SE SE	PRDC	4174	----	4227	1163	kb
nom	24931	Bumpas #1	TROLZ & ASSOC	30 Hils	05S-02W-32	SE SE SW	PRDC	4175	----	4220	1172	kb
nom	23902	Griffiths #1	TWIN OIL CO.	30 Hils	05S-02W-32	SE SW SE	PRDC	4194	----	4229	1166	kb
nom	24654	Leatherman-Brown #1	VON OIL CO.	30 Hils	05S-02W-32	SE SE NW	PRDC	4195	----	4220	1161	kb
nom	22780	Powell #1	GLAVIN, CLEM	30 Hils	05S-02W-33	SE SW SW	PRDC	4214	----	4244	1177	kb
nom	26958	Seeley #1	O'NEILL & ROWLSON	30 Hils	05S-02W-33	SE SW NW	PRDC	4180	----	4189	1155	rf
nom	22048	Conklin #1	DAVIS DRLG. CO.	30 Hils	05S-03W-01	SE NE NE	PRDC	4310	----	4362	1099	kb
nom	21894	Bater-Nesbitt #1	PERRY, C.A. & SON	30 Hils	05S-03W-01	NW SW SW	PRDC	4207	----	4234	1052	kb
nom	25719	Doan #1	NANCO INC.	30 Hils	05S-03W-02	SE NE SE	PRDC	4200	----	4259	1046	kb
nom	21845	Stone #1	PERRY, C.A. & SON	30 Hils	05S-03W-02	SE SE SW	PRDC	4190	----	4200	1035	kb
nom	23422	Winfield #3	HATHCOCK, LEE A.	30 Hils	05S-03W-04	E NW NW	PRDC	4200	----	4255	1030	kb
nom	22201	Winfield #1	WOLVERINE DRLG. CO.	30 Hils	05S-03W-04	SE SW NE	PRDC	4208	----	4260	1037	kb
nom	28611	Evans #1	COWEN, M. T.	30 Hils	05S-03W-05	SE SE SE	PRDC	4162	----	4250	1029	kb
nom	28185	Evans #1	MAGDA PETRO. CO.	30 Hils	05S-03W-05	SE SE SE	PRDC	4162	----	4252	1029	kb
nom	31408	Marshall #1	KEG OIL CO.	30 Hils	05S-03W-07	NW SW NW	PRDC	4169	----	4206	1076	rf
nom	20935	Kintigh #1	HOUSEKNECHT, G. D.	30 Hils	05S-03W-09	NW NW SW	PRDC	4144	----	4186	1018	rf
nom	20733	Barnett #1	DAVIS DRLG. CO.	30 Hils	05S-03W-10	SE NE SW	PRDC	4143	----	4202	1028	kb
nom	22268	Lattas-Harrison #1	DAVIS DRLG. CO.	30 Hils	05S-03W-10	SE SW SE	PRDC	4134	----	4192	1042	kb
nom	21988	Buehrer #2	TIDAL OIL CO., INC.	30 Hils	05S-03W-11	SE SE SW	PRDC	4167	----	4225	1082	rf
nom	22778	Staelens #1	TWIN OIL CO.	30 Hils	05S-03W-11	SE NE SW	PRDC	4187	----	4250	1081	rf
nom	24781	Rowe #1	VON OIL CO.	30 Hils	05S-03W-11	NW NE NW	PRDC	4200	----	4236	1041	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	23794	Pope #1-A	DAVIS, DONALD E.	30 Hils	05S-03W-13	SW SW SW	PRDC	4210	----	4259	1137	kb
nom	25951	Owen #1	LILLY, JOSEPH E.	30 Hils	05S-03W-13	SE NW SW	PRDC	4250	----	4286	1129	rf
nom	24932	Leonard #1	LINCOLN ROCK CORP.	30 Hils	05S-03W-13	SW SE SW	PRDC	4232	----	4238	1156	kb
nom	23048	Pope #1	OHIO OIL CO.	30 Hils	05S-03W-13	SE SW SW	PRDC	4204	----	4250	1136	kb
nom	24769	Shipman & Kobitz	ROVSEK, A. E.	30 Hils	05S-03W-13	SE SW SE	PRDC	4236	----	4294	1159	kb
nom	26526	Wells #1	ROVSEK, A. E.	30 Hils	05S-03W-13	NW NW NW	PRDC	4270	----	4306	1165	kb
nom	23306	Leonard & Sutherland #1	SALT DOME PROD. CO.	30 Hils	05S-03W-13	SE SE SW	PRDC	4235	----	4290	1164	kb
nom	23906	Gilbert Karr #1	HATHCOCK, LEE A.	30 Hils	05S-03W-14	NW SE NE	PRDC	4224	----	4276	1145	kb
nom	22862	Karr "A" #2	MARATHON	30 Hils	05S-03W-14	SE SE SE	PRDC	4222	----	4245	1163	kb
nom	23052	Karr #1-A	TROLZ & LEIGHTON	30 Hils	05S-03W-14	SE NE SE	PRDC	4200	----	4246	1116	kb
nom	23810	Magda #1	TURTLE DRLG. CO.	30 Hils	05S-03W-14	SE NW NE	PRDC	4228	----	4280	1146	kb
nom	22167	Chilson #3	DAVIS DRLG. CO.	30 Hils	05S-03W-23	NW SW SE	PRDC	4135	----	4190	1133	kb
nom	21918	Chilson #4	DAVIS DRLG. CO.	30 Hils	05S-03W-23	SE SW SE	PRDC	4110	----	4160	1097	kb
nom	22567	Mann #1	DAVIS DRLG. CO.	30 Hils	05S-03W-23	NW NE NW	PRDC	4173	----	4198	1090	kb
nom	21989	Spencer #1	OHIO OIL CO.	30 Hils	05S-03W-23	SE NE SW	PRDC	4159	----	4207	1146	kb
nom	21791	Mann #1	OHIO OIL CO.	30 Hils	05S-03W-23	SE NE NW	PRDC	4171	----	4220	1124	kb
nom	22965	Butler Heirs #A-1	TROLZ & LEIGHTON	30 Hils	05S-03W-23	SE NE NE	PRDC	4202	----	4259	1154	kb
nom	23220	Curey #1	HATHCOCK, LEE A.	30 Hils	05S-03W-24	NW SW NE	PRDC	4203	----	4233	1145	rf
nom	24994	Chilson #1	JENKINS & WOODRUFF	30 Hils	05S-03W-24	NW SE SW	PRDC	4142	----	4191	1104	rf
nom	22985	Ruda #1	MCCLURE	30 Hils	05S-03W-24	NW SE SE	PRDC	4170	----	4228	1132	kb
nom	24344	Branstetter #2	RUDMAN & MCCLURE	30 Hils	05S-03W-24	SW NW SW	PRDC	4191	----	4241	1154	kb
nom	22458	Branstetter #1	RUDMAN & MCCLURE	30 Hils	05S-03W-24	NW NW SW	PRDC	4222	----	4277	1167	kb
nom	24450	Curey & Walter #1	TROLZ & ASSOC.	30 Hils	05S-03W-24	NW SE NE	PRDC	4180	----	4235	1129	kb
nom	23050	Curey #2	WOLVERINE DRLG. CO.	30 Hils	05S-03W-24	SE NW NW	PRDC	4237	----	4264	1163	kb
nom	22164	Spencer-Hergert #1	DAVIS DRLG. CO.	30 Hils	05S-03W-25	NW NE SE	PRDC	4210	----	4250	1189	kb
nom	27956	Brown #1	MCCLURE	30 Hils	05S-03W-25	SE SW SW	PRDC	4185	----	4206	1205	kb
nom	22257	Jordan-Northrup #1	MCCLURE	30 Hils	05S-03W-25	NW SW NE	PRDC	4220	----	4260	1174	kb
nom	22305	Jordan-Brown #1	MCCLURE-COVEY-NULL	30 Hils	05S-03W-25	SE NW SW	PRDC	4174	----	4188	1178	kb
nom	25858	Pope #1	TROLZ & ASSOC.	30 Hils	05S-03W-25	NW NW NE	PRDC	4176	----	4200	1154	kb
nom	26451	Maxson #1	BELL & GAULT	30 Hils	05S-03W-26	SE NE SW	PRDC	4090	----	4100	1109	rf
nom	28260	Chilson #1	CENT. AMER. DRLG.	30 Hils	05S-03W-26	SE NE SW	PRDC	4082	----	4102	1096	kb
nom	28610	Rumsey & Ellis #1	MASON PETRO. PROP.	30 Hils	05S-03W-26	SW NE SW	TMPL	4090	----	4400	1109	kb
nom	24535	Chilson "Y" #1	MCCLURE	30 Hils	05S-03W-26	SE SE NE	PRDC	4163	----	4172	1155	kb
nom	34350	Sloan #1-27	POWELL PETRO., INC.	30 Hils	05S-03W-27	SE NE SE	PRDC	4095	----	4146	1116	kb
nom	26404	Ghete #1	PATRICK PETRO.	30 Hils	05S-03W-35	NW SE NE	PRDC	4086	----	4102	1141	kb
nom	23349	Hergert-Houseknecht #1	FULK OIL CO.	30 Hils	05S-03W-36	SE NE SE	PRDC	4136	----	4200	1174	kb
nom	23118	Hergert #1	GLAVIN, CLEM	30 Hils	05S-03W-36	SE SE SE	PRDC	4160	----	4204	1191	kb
nom	22971	Houseknecht #1	GLAVIN, CLEM	30 Hils	05S-03W-36	SE NW NE	PRDC	4184	----	4214	1179	kb
nom	24793	Houseknecht #1-A	JENKINS & WOODRUFF	30 Hils	05S-03W-36	NE NW NE	PRDC	4186	----	4208	1176	kb
nom	22636	Houseknecht #A-2	MCCL.,MONCRIEF,FULK	30 Hils	05S-03W-36	NW SE NE	PRDC	4183	----	4205	1190	kb
nom	26532	Thompson-Morse #1	ROVSEK, A. E.	30 Hils	05S-03W-36	NW SW NW	PRDC	4132	----	4185	1175	kb
nom	27934	Houseknecht #1	WOODY'S OIL & GAS	30 Hils	05S-03W-36	NW NW NE	PRDC	4180	----	4206	1174	kb
nom	23954	Lindsay #1	MCALESTER & LAWTON	30 Hils	05S-04W-04	NW SW NW	PRDC	4090	----	4141	1004	kb
nom	22011	Johnson #1	MCCLURE	30 Hils	05S-04W-07	NE NE SE	PRDC	4037	----	4097	1013	kb
nom	24907	Randall #1	N. AMER. DRLG.	30 Hils	05S-04W-11	SE NW NE	PRDC	4131	----	4243	1028	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	29150	Smith #1-22	MCCULLOCH-IDS	30 Hils	05S-04W-22	C SE NW	PRDC	4040	----	4097	1036	kb
nom	23059	Adams #1	CRITCHFIELD, C. F.	30 Hils	05S-04W-23	SE SE NE	PRDC	4047	----	4093	1033	rf
nom	25476	Hochstedler #1	CALVERT EASTERN DRLG	30 Hils	06S-01W-19	NW NE NE	PRDC	4185	----	4205	1213	kb
nom	24157	Bailey #1	MI OIL CO.	30 Hils	06S-01W-23	NW SE NE	PRDC	4038	----	4074	1071	kb
nom	25153	Krieble #1	MCCLURE	30 Hils	06S-01W-28	NW NW SW	PRDC	4063	----	4101	1165	kb
nom	22217	Reed #A-1	RIXLEBEN, INC.	30 Hils	06S-01W-30	SE NE NW	PRDC	4094	----	4150	1211	kb
nom	22099	Culbert #1	TURTLE DRLG. CO.	30 Hils	06S-01W-31	NW NE SE	PRDC	4046	----	4101	1219	kb
nom	23233	Sinclair #1	SALMON, FARN H.	30 Hils	06S-01W-35	SE SW NE	PRDC	3853	----	3876	1021	rf
nom	26531	Walworth #1	COLLINS BROS.	30 Hils	06S-02W-02	NW SW SW	PRDC	4149	----	4204	1173	kb
nom	27716	North-Sawyer #1	COLLINS BROS.	30 Hils	06S-02W-03	C NW SE	PRDC	4171	----	4281	1189	kb
nom	24460	Stanlake #2	HOUSEKNECHT OIL	30 Hils	06S-02W-03	SE NW SW	PRDC	4168	----	4175	1198	kb
nom	24813	Taylor #1	KEILLOR & CLARK	30 Hils	06S-02W-03	SE SW SE	STPR	----	----	4188	1202	kb
nom	27028	Cole #1	O'NEILL & BOWLSON	30 Hils	06S-02W-03	NW NW NW	PRDC	4195	----	4200	1170	gr
nom	23049	Roberts & Watson #1	ARROWHEAD EXPL.	30 Hils	06S-02W-04	NW SW NW	PRDC	4176	----	4229	1170	kb
nom	23716	Stanlake & Roberts #1	CASSIDY, SAM	30 Hils	06S-02W-04	NW SE NE	PRDC	4195	----	4207	1192	kb
nom	24459	Randolph -Roberts #1	HOUSEKNECHT, PATRICK	30 Hils	06S-02W-04	NW NW NE	PRDC	4202	----	4209	1174	kb
nom	23066	Sponseller #1	LESH, D.B. DRLG.	30 Hils	06S-02W-04	NW NE SW	PRDC	4162	----	4240	1184	kb
nom	23925	Peterson #1	NATOL CORP.	30 Hils	06S-02W-04	NW NW SE	PRDC	4184	----	4191	1187	kb
nom	23990	Randolph #1	O'BRIEN & MEYERS	30 Hils	06S-02W-04	NW NE SE	PRDC	4185	----	4244	1203	kb
nom	24432	Randolph #1	SMITH PETRO.	30 Hils	06S-02W-04	SE SE SE	PRDC	4167	----	4215	1213	kb
nom	24979	Towe #2	JENKINS & WOODRUFF	30 Hils	06S-02W-05	SE NW NE	PRDC	4219	----	4254	1196	kb
nom	25160	Towe-Roberts #1	ROBINS, K.O.	30 Hils	06S-02W-05	NW NW NW	PRDC	4136	----	4190	1147	kb
nom	26171	Towe-Roberts #2	ROBINS, K.O.	30 Hils	06S-02W-05	SE NW NW	PRDC	4135	----	4140	1144	kb
nom	25733	Roberts #1	TROLZ & ASSOC.	30 Hils	06S-02W-05	SE SW NW	PRDC	4194	----	4219	1191	kb
nom	24959	Towe #2	WELL SERVICE, INC.	30 Hils	06S-02W-05	SE NE NW	PRDC	4137	----	4157	1142	kb
nom	22775	Markle #1	WHITMER	30 Hils	06S-02W-05	SE NE NE	PRDC	4159	----	4210	1161	kb
nom	22136	Lewis-Herman #1	HILLSDALE DRLG. CO.	30 Hils	06S-02W-06	NW NE SW	PRDC	4085	----	4116	1126	kb
nom	24792	Butcher #1	JENKINS & WOODRUFF	30 Hils	06S-02W-06	NW SW NE	PRDC	4092	----	4138	1142	rf
nom	24073	Swager #1	R & H DEVEL. CO.	30 Hils	06S-02W-06	NW NE NE	PRDC	4134	----	4188	1146	rf
nom	25374	Haskell #1	TROLZ & ASSOC.	30 Hils	06S-02W-06	NW SE SE	PRDC	4140	----	4185	1176	kb
nom	21834	Roberts-Haskell #1	MCCLURE	30 Hils	06S-02W-07	SE SE SE	PRDC	4081	----	4086	1125	kb
nom	23018	Butcher #1	ROVSEK & VOLK	30 Hils	06S-02W-07	NW NE NE	PRDC	4162	----	4202	1163	kb
nom	24084	Baker #1-A	JENKINS & WOODRUFF	30 Hils	06S-02W-08	SE SE NW	PRDC	4139	----	4169	1166	rf
nom	25212	Owens #1	JENKINS & WOODRUFF	30 Hils	06S-02W-08	NW NW SW	PRDC	4089	----	4120	1153	kb
nom	25076	Barker #3	JENKINS & WOODRUFF	30 Hils	06S-02W-08	SE SW NW	PRDC	4132	----	4168	1165	kb
nom	23180	Baker #1	MCCLURE	30 Hils	06S-02W-08	NW NE NW	PRDC	4195	----	4223	1208	kb
nom	21956	Smith #1	MCCLURE	30 Hils	06S-02W-08	SE SW NE	PRDC	4118	----	4185	1179	kb
nom	22137	Van Wert-Meeks #1	MCCLURE	30 Hils	06S-02W-08	SE NE SE	PRDC	4147	----	4162	1176	kb
nom	22038	Dodge #1	MCCLURE & MI OIL	30 Hils	06S-02W-08	SE NW SE	PRDC	4110	----	4166	1161	kb
nom	22510	Barker #1	MCCLURE-COVEY-NULL	30 Hils	06S-02W-08	NW NW NW	PRDC	4128	----	4213	1171	kb
nom	22019	Baker #1	OHIO OIL CO.	30 Hils	06S-02W-08	SE NE NW	PRDC	4160	----	4205	1187	kb
nom	25159	Dodge #1	TROLZ & ASSOC.	30 Hils	06S-02W-08	SE SE SW	PRDC	4103	----	4117	1142	kb
nom	25197	Owens #1	TROLZ & ASSOC.	30 Hils	06S-02W-08	SE NW SW	PRDC	4105	----	4140	1144	kb
nom	23298	Smith #1	TURTLE DRLG. CO.	30 Hils	06S-02W-08	SE NW NE	PRDC	4225	----	4236	1208	rf
nom	25463	Goodwin #1	CASSIDY, SAM	30 Hils	06S-02W-09	NW SW SW	PRDC	4073	----	4200	1151	rf

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	22999	Sponseller #1	LESH, D.B. DRLG.	30 Hils	06S-02W-09	NW NE NE	PRDC	4168	----	4225	1207	kb
nom	21957	Lynch #1	PALMER & COLLINS	30 Hils	06S-02W-09	NW SW NW	PRDC	4176	----	4203	1221	kb
nom	22045	Goodwin #1	WOLVERINE DRLG. CO.	30 Hils	06S-02W-09	NW SW SW	PRDC	3816	----	4114	1152	rf
nom	24883	N. Adams School #1	CASSIDY, SAM	30 Hils	06S-02W-10	SE NE NW	PRDC	4156	----	4170	1202	kb
nom	24903	Morehead #1	KEILLOR & CLARK	30 Hils	06S-02W-10	NW NE NE	PRDC	4142	----	4191	1197	kb
nom	26401	Reed #1	KLUVER	30 Hils	06S-02W-10	NW DE NE	PRDC	4142	----	4159	1191	rf
nom	22677	North-Hilliar #1	MCCLURE	30 Hils	06S-02W-10	SE NE SW	PRDC	4127	----	4195	1179	rf
nom	24666	Stack-Randolph #1	MCCLURE	30 Hils	06S-02W-10	NW NW NW	PRDC	4170	----	4171	1188	kb
nom	29467	Dewey #1	PATRICK PETRO.	30 Hils	06S-02W-10	SE SE SE	PRDC	4107	----	4125	1172	kb
nom	29774	Dewey #1	PAULEY OIL	30 Hils	06S-02W-10	SE SE SE	PRDC	4107	----	4125	1172	kb
nom	27131	N. Adams School #1	SIMPSON, C.J.	30 Hils	06S-02W-10	NW SW SE	PRDC	4150	----	4190	1195	kb
nom	24753	Lyons #1	MCCLURE	30 Hils	06S-02W-11	SE NE SE	PRDC	4150	----	4169	1160	rf
nom	24783	Tucker #1	FAYETTE DRLG. CO.	30 Hils	06S-02W-12	NW SE SE	PRDC	4165	----	4281	1191	rf
nom	24824	Shaw #1	FAYETTE DRLG. CO.	30 Hils	06S-02W-12	NW SW NW	PRDC	4175	----	4181	1164	rf
nom	23703	Trumble #1	CASSIDY, SAM	30 Hils	06S-02W-14	NW NW SW	PRDC	4062	----	4067	1136	rf
nom	22419	Andrew #1	O'BRIEN & MEYERS	30 Hils	06S-02W-14	NW SW NW	PRDC	4097	----	4110	1146	kb
nom	29547	Arno #1	PATRICK PETRO.	30 Hils	06S-02W-14	SE NE SW	STPR	----	----	4101	1172	kb
nom	29731	May #1	PAULEY OIL	30 Hils	06S-02W-14	SE SW NW	PRDC	4055	----	4075	1152	kb
nom	24711	Robinson #1	SIMPSON, C.J.	30 Hils	06S-02W-14	SE SE NW	PRDC	4085	----	4105	1171	kb
nom	29357	May #1	UNITED PETRO., INC.	30 Hils	06S-02W-14	NW SW NW	PRDC	4085	----	4110	1146	kb
nom	22095	Addleman #1	DAVIS DRLG. CO.	30 Hils	06S-02W-15	SE NW SW	PRDC	4031	----	4075	1136	kb
nom	21990	Russell-Warren #1	PALMER & CUMMINS	30 Hils	06S-02W-15	NW NW SE	PRDC	4076	----	4116	1144	kb
nom	26118	Russell-Titus #1	ROBINS, K.O.	30 Hils	06S-02W-15	NW SW NE	PRDC	4056	----	4120	1158	kb
nom	22070	Gale #1	COVEY,NULL & MCCLUR	30 Hils	06S-02W-16	NW SW NW	PRDC	4072	----	4100	1133	kb
nom	22097	Gale #1	DAVIS DRLG. CO.	30 Hils	06S-02W-16	NW NE NW	PRDC	4120	----	4154	1162	kb
nom	25645	Albright #1	JENKINS & WOODRUFF	30 Hils	06S-02W-16	SE NW SW	PRDC	4081	----	4107	1152	rf
nom	22204	Gale #A-1	MCCLURE	30 Hils	06S-02W-16	NW NW NW	PRDC	4082	----	4135	1129	rf
nom	22029	Post #1	MCCLURE	30 Hils	06S-02W-16	SE NE SE	PRDC	4036	----	4101	1133	kb
nom	21851	Bolenbaugh #1	ROVSEK, A. E.	30 Hils	06S-02W-16	NW SE NW	STPR	----	----	4057	1031	kb
nom	22751	Daniels #1	COWEN, M. T.	30 Hils	06S-02W-17	NW NW NE	PRDC	4071	----	4090	1154	kb
nom	25840	Albright #1	LILLY, JOSEPH E.	30 Hils	06S-02W-17	SE NE SE	PRDC	4080	----	4095	1136	kb
nom	22833	Jackson #1	MCCLURE-COVEY-NULL	30 Hils	06S-02W-17	NW NW SE	PRDC	4062	----	4108	1138	kb
nom	23175	Daniels #2	TWIN OIL CO.	30 Hils	06S-02W-17	SE NW NE	PRDC	4030	----	4113	1125	kb
nom	26252	Ebel #1	HOUSEKNECHT OIL	30 Hils	06S-02W-18	SE SW SW	PRDC	4056	----	4207	1174	kb
nom	24657	Fuller #1	JENKINS & WOODRUFF	30 Hils	06S-02W-21	NW NW NE	PRDC	4038	----	4114	1132	rf
nom	22982	Melvin & Hochstedler #1	KELLY, J.O.	30 Hils	06S-02W-24	NW SE NE	PRDC	4128	----	4150	1198	kb
nom	23695	Grohman #1	O'BRIEN & MEYERS	30 Hils	06S-02W-24	NW NE SE	PRDC	4108	----	4135	1190	kb
nom	26949	Graham #1	US-CAN CORP.	30 Hils	06S-02W-27	SE SW NE	PRDC	4000	----	4152	1158	rf
nom	23046	Black #1	JENKINS & WOODRUFF	30 Hils	06S-02W-28	SE NE NW	PRDC	4041	----	4091	1172	rf
nom	21983	Summers #1	WEED,THURLOW,MCCLUR	30 Hils	06S-02W-28	SE NE NE	PRDC	3977	----	4042	1146	rf
nom	29010	Fry #1	KELLY OIL	30 Hils	06S-02W-32	NE NW NW	PRDC	3978	----	4030	1178	kb
nom	26059	Dracsin #1	BELL & GAULT	30 Hils	06S-03W-01	NW NE SE	PRDC	4085	----	4091	1138	rf
nom	26557	Dracsin #1-A	BELL & GAULT	30 Hils	06S-03W-01	SE NW SE	PRDC	4058	----	4066	1124	rf
nom	25078	Powell #1	N. AMER. DRLG.	30 Hils	06S-03W-01	NW NW SW	PRDC	4008	----	4084	1103	rf
nom	28387	Salway #1	MCCLURE	30 Hils	06S-03W-05	SE SW SW	PRDC	4045	----	4110	1174	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	23079	Schmitt #1	FRONTIER PET.	30 Hils	06S-03W-12	SE SW NE	PRDC	4016	----	4080	1121	kb
nom	22172	Claybaugh #1	FAYETTE DRLG. CO.	30 Hils	06S-03W-14	NE NE NW	PRDC	4020	----	4058	1132	rf
nom	20220	Cole #1	MCCLURE	30 Hils	06S-03W-32	SE SE NE	PRDC	3872	----	3896	1142	?
nom	26295	Gasper #1	PERRY, C.A. & SON	30 Hils	06S-03W-32	NE NW NW	PRDC	3799	----	3900	1084	kb
nom	21745	Balukonis #1	BALUKONIS, WALTER S.	30 Hils	06S-04W-01	SW NW SE	PRDC	4008	----	4159	1095	rf
nom	22339	Balukonis #B-1	BALUKONIS, WALTER S.	30 Hils	06S-04W-01	SE NE SE	PRDC	3984	----	4032	1107	rf
nom	26006	Fritzie #1	HOUSEKNECHT OIL	30 Hils	06S-04W-02	SE NW NW	PRDC	3945	----	4023	1069	kb
nom	20357	Ames #1	MCCLURE	30 Hils	06S-04W-07	SW SW NW	PRDC	3811	----	3842	1024	rf
nom	27051	Marshall #1	HOUSEKNECHT OIL	30 Hils	06S-04W-09	NE SW NW	PRDC	3863	----	3891	1069	kb
nom	27344	Green #1	HOUSEKNECHT OIL	30 Hils	06S-04W-11	NW NW NW	PRDC	3956	----	4000	1097	kb
nom	29149	McCul.-IDS-Anchutz-Hughes #1	MCCULLOCH-IDS	30 Hils	06S-04W-12	C NW NW	PRDC	3993	----	4041	1134	kb
nom	31252	Hamilton #1-21	MARATHON	30 Hils	06S-04W-21	SE SE NW	PRDC	3803	----	3865	1076	kb
nom	31381	Hale #1-21	MARATHON	30 Hils	06S-04W-21	SW SW NW	PRDC	3788	----	3865	1070	kb
nom	28165	Marsh etux #1	ANDERSON OIL	30 Hils	06S-04W-30	SE SE SE	PRDC	3680	----	3700	1028	kb
nom	26460	Pitcher #1	MOBIL	30 Hils	06S-04W-30	C NE SW	PRDC	3707	----	3763	1036	kb
nom	23677	Clark #1	CUMMINGS, ARTHUR L.	30 Hils	06S-04W-36	SE NE NW	PRDC	3892	----	3950	1163	kb
nom	26308	Earl #1	SIMPSON, C.J.	30 Hils	07S-01W-07	SE NE SW	PRDC	3893	----	3941	1128	kb
nom	25508	Rymal #1	PERRY, C.A. & SON	30 Hils	07S-01W-15	NW NW SE	TMPL	3769	----	4210	1028	kb
nom	23099	Mason & Brown #1	COVEY, NULL & MCCLUR	30 Hils	07S-01W-16	NW NW SW	PRDC	3784	----	3832	1036	rf
nom	22925	Harris #1	LEIGHTON, R.O.	30 Hils	07S-01W-28	SW NE SW	PRDC	3617	----	3661	966	kb
nom	35064	Severance-Frantz #1-A	ANNEX OIL CORP.	30 Hils	07S-01W-29	NW NW SE	PRDC	3640	----	3584	965	kb
nom	33883	Wolfe #1	GEOCHEMICAL SURVEYS	30 Hils	07S-01W-36	C SW NE	PRDC	----	----	3612	946	kb
nom	24408	Tait & Ellenwood #1	TROLZ & ASSOC.	30 Hils	07S-02W-01	SE NW SW	PRDC	3967	----	4045	1193	kb
nom	21120	Rose & Hamiton #1	EDWARDS, BRYAN	30 Hils	07S-02W-05	NW NW SE	PRDC	3858	----	4035	1108	kb
nom	23575	Johnson #1	HOUSEKNECHT OIL	30 Hils	07S-02W-05	SW NW NW	PRDC	3920	----	4003	1118	kb
nom	21120	Rose & Hamilton #1	EDWARDS, BRYAN	30 Hils	07S-02W-06	NW NW SE	PRDC	3858	----	4035	1108	rf
nom	26278	Reynolds #1	HOUSEKNECHT-MCCLURE	30 Hils	07S-02W-08	SE NE NE	PRDC	3857	----	3910	1121	kb
nom	21770	Lee #1	MCCLURE	30 Hils	07S-02W-10	NW SE SE	PRDC	3839	----	3870	1099	kb
nom	26078	Edmonds #1	TEXACO	30 Hils	07S-02W-10	SE SW SW	PRDC	3809	----	3957	1094	kb
nom	22304	Bailey-Sanders #A-1	D. & I. DRLG. CO.	30 Hils	07S-02W-24	NW NE NW	PRDC	3758	----	3795	1061	kb
nom	22537	Perrin #1	HILLSDALE DRLG. CO.	30 Hils	07S-02W-24	NW NE NE	PRDC	3760	----	3851	1066	kb
nom	29009	Kramer & Kramer #1	ANDERSON & GARONZIK	30 Hils	07S-04W-09	SW SW SW	PRDC	3667	----	3707	1082	kb
nom	22863	Shackelford #1	MCCLURE	30 Hils	07S-04W-32	NW NE NE	PRDC	3596	----	3644	1091	rf
nom	25417	Rodgers-Bishop #1	WHITMER	30 Hils	07S-04W-33	NW SW SE	PRDC	3580	----	3649	1126	kb
nom	22729	Young #1	TROLZ & MCINALLY	30 Hils	08S-01W-02	SW SW SE	TMPL	3470	----	3692	914	rf
nom	22147	Lickley #1	CARTER OIL	30 Hils	08S-01W-05	NW NE SE	PRDC	3514	----	3578	944	rf
nom	22821	Tampurges #1	BELL & GAULT	30 Hils	08S-01W-11	NE NW NW	PRDC	3475	----	3533	918	rf
nom	23997	Durling #1	HATHCOCK, LEE A.	30 Hils	08S-01W-11	SW NW NE	PRDC	3467	----	3514	924	rf
nom	27349	Laser #1	BELL & GAULT	30 Hils	08S-01W-15	SW NE NW	TMPL	3472	----	3603	916	rf
nom	25158	Laser #1	TROLZ & ASSOC.	30 Hils	08S-01W-15	SW SW NW	PRDC	3434	----	3520	928	rf
nom	22819	Wherle #1	UNION DEV. & PERRY	30 Hils	08S-01W-21	SW SE SW	PRDC	3415	----	3429	904	kb
nom	22021	Hayes #1	MCCLURE	30 Hils	08S-03W-23	NE NE SW	PRDC	3459	----	3514	1026	kb
nom	22216	Evans #1	RIXLEBAN, INC.	30 Hils	08S-04W-01	NW NW NW	PRDC	3531	----	3564	1094	kb
nom	24996	Heath #1	WHITMER	30 Hils	08S-04W-03	SE SW SE	PRDC	3480	----	3559	1061	rf
nom	29178	McCulloch et al #1	MCCULLOCH-IDS	30 Hils	09S-01W-02	E NE	PRDC	3206	----	3250	864	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	26655	Fellows #1	LIBERTY PETRO.	30 Hils	09S-01W-03	SE SW NE	TMPL	3227	----	4303	886	kb
nom	27024	Horwath #1	LIBERTY PETRO.	30 Hils	09S-01W-03	NW SE NW	ECLR	3225	----	3977	882	kb
nom	28794	Baker #1	MOBIL	33 Ingm	01N-01W-11	C NW NE	STPR	----	----	5925	991	kb
nom	29416	Hasbrook #1	MOBIL	33 Ingm	01N-01W-35	SE SE SE	PRDC	5638	----	5700	984	kb
nom	22607	Basore #1	KETCHUM, RALPH F.	33 Ingm	01N-02E-13	NW NW NW	PRDC	5450	----	5473	971	kb
nom	24470	Wild #1	AMBASSADOR OIL CORP.	33 Ingm	01N-02E-31	C SE NE	TMPL	5794	----	5830	944	kb
nom	28801	MI Trap Shoot Ass. #1	BERMAX OIL CO.	33 Ingm	02N-01W-20	NE SW SE	STPR	----	----	5985	926	kb
nom	24518	Harkness #1	PURE OIL CO.	33 Ingm	02N-02W-16	NE NE NE	TMPL	5932	----	6077	916	kb
nom	28929	Seibly #1	HIBBARD OIL CORP.	33 Ingm	02N-02W-33	S SW SE	PRDC	5715	----	5800	937	kb
nom	10011	Glaser #1	COLVIN & ELEC.STEEL	33 Ingm	03N-01E-14	SE SE SE	STPR	----	----	6599	908	?
nom	25025	Burtle #1	AMBASSADOR OIL CORP.	34 Iona	06N-08W-04	C NE NE	PRDC	6073	----	6146	718	kb
nom	27021	Dieterman #1	AN-SON CORP.	34 Iona	06N-08W-04	C SE NW	PRDC	6024	----	6090	685	kb
nom	32951	Total-Luck #1-12	TOTAL PETRO.	38 Jksn	01S-01W-12	SW NE NE	PRDC	5570	----	5662	962	kb
nom	22417	Carlson #1	COBB, RUSSELL INC.	38 Jksn	01S-03W-04	NW SE SE	PRDC	5755	----	5280	948	kb
nom	22378	Mentink #1	BELL & GAULT	38 Jksn	01S-03W-09	SW NW SW	PRDC	5209	----	5215	988	rf
nom	26456	Dixon #1	HILL, A. G.	38 Jksn	01S-03W-10	NE SE SE	PRDC	5190	----	5207	935	kb
nom	22719	Schultz-Canull #1	TENNEY, IVAN	38 Jksn	01S-03W-14	NW SW SE	PRDC	5175	----	5244	945	kb
nom	27903	Palmer #1	SWAN, G. & MCGC	38 Jksn	01S-03W-36	NW SE NW	PRDC	5169	----	5192	1025	kb
nom	26549	Vedder #1	TEXACO	38 Jksn	02S-02W-10	SW NE SE	PRDC	5060	----	5128	974	kb
nom	27084	Fisher #1	SWAN, G. & MCGC	38 Jksn	02S-02W-16	SW SE SW	PRDC	4978	----	4986	930	kb
nom	26548	Benn #1	TEXACO	38 Jksn	02S-02W-16	SW NE SE	PRDC	4954	----	5085	940	kb
nom	27478	Graham & Carlson #1	SWAN, G. & MCGC	38 Jksn	02S-02W-21	SE NE SW	PRDC	4946	----	4999	990	kb
nom	21905	McConkey #1	MILLER BROS.	38 Jksn	02S-03W-26	SW SW SW	PRDC	4792	----	4837	982	kb
nom	27882	MacDonald-Lett #1	M.I.O. EXPL.	38 Jksn	02S-03W-27	NE SE SW	PRDC	4814	----	4860	1010	kb
nom	22252	Cumper #1	COLLIN & BLACK	38 Jksn	03S-01W-32	SE SE SE	PRDC	4621	----	4656	988	kb
nom	19699	Hoxie #1	MCCLURE-COVEY-NULL	38 Jksn	03S-03W-20	SE SE SW	PRDC	4523	----	4569	1042	kb
nom	22674	Rhodes #1	PALMER & CUMMINS	38 Jksn	03S-03W-22	NW NE SW	PRDC	4619	----	4660	1035	kb
nom	22306	Gardner-Booth #1	ROVSEK & VOLK	38 Jksn	03S-03W-25	NW SE SE	PRDC	4564	----	4633	1008	rf
nom	21601	Braddock #1	ROVSEK, A. E.	38 Jksn	03S-03W-25	SE NW SW	PRDC	4567	----	4616	1027	kb
nom	29556	Kintigh #1	MASON PETRO. PROP.	38 Jksn	03S-03W-30	SE SE SE	PRDC	4541	----	4575	1062	kb
nom	22351	Smith #1	MCCLURE-COVEY-NULL	38 Jksn	03S-03W-30	SE SE NW	PRDC	4482	----	4520	1000	kb
nom	24983	Poole #1	MCCLURE	38 Jksn	03S-03W-33	E SE SE	PRDC	4513	----	4545	1042	kb
nom	19611	Gunderman #1	MCCLURE-COVEY-NULL	38 Jksn	03S-03W-33	NW NW NW	PRDC	4497	----	4519	1032	kb
nom	28460	Deland #1	COWEN, M. T.	38 Jksn	04S-01E-10	NE SW NE	PRDC	4648	----	4675	989	kb
nom	28665	Wellhoff #1	COWEN, M. T.	38 Jksn	04S-01E-10	SE NE NE	PRDC	4632	----	4665	995	kb
nom	28492	Wellhoff #1-A	COWEN, M. T.	38 Jksn	04S-01E-11	NW SW NW	PRDC	4630	----	4718	1011	kb
nom	28848	Dermyre-Parker #1	GORDON, G. H.	38 Jksn	04S-01E-11	NW NW SW	PRDC	4628	----	4637	1011	kb
nom	28705	Hess #1	BAYLEY PRODUCTS	38 Jksn	04S-02E-08	NW NW SW	PRDC	4617	----	4671	987	kb
nom	22953	Deklein #1	BELL & GAULT	38 Jksn	04S-02W-05	SE SE SE	PRDC	4480	----	4494	1022	rf
nom	22069	Ford #1	DAVIS DRLG. CO.	38 Jksn	04S-02W-05	NW SW SW	PRDC	4510	----	4542	1034	kb
nom	24417	DeKlein #1	SMITH PETRO.	38 Jksn	04S-02W-05	NW SW SE	PRDC	4486	----	4497	1017	rf
nom	24099	Hughes #1	HATHCOCK, LEE A.	38 Jksn	04S-02W-08	NW NE NE	PRDC	4481	----	4491	1019	rf

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	Elevation	KB/RF/GR
nom	22955	Barton #1-A	PETROMIN	38 Jksn	04S-02W-08	SE NE NW	PRDC	4457	----	4473	1035	kb
nom	21921	Center #1	MI PIPE CO.	38 Jksn	04S-02W-09	SE SW SW	PRDC	4525	----	4553	1094	kb
nom	21976	Jackson Co Rd Comm #1	JACKSON CO. RD. COMM	38 Jksn	04S-02W-11	SW SW NW	PRDC	4510	----	4569	1033	kb
nom	23044	Tripp #1	LEITCH, EDWARD	38 Jksn	04S-02W-16	NW NW NE	PRDC	4488	----	4511	1061	rf
nom	22984	Center #1	ROVSEK & VOLK	38 Jksn	04S-02W-16	NW NW NW	PRDC	4481	----	4547	1069	kb
nom	24712	Strait #1	BELL & GAULT	38 Jksn	04S-02W-17	NW NE SW	PRDC	4527	----	4556	1140	rf
nom	23013	Bellis #1	MCCLURE	38 Jksn	04S-02W-17	NW NE NE	PRDC	4480	----	4534	1072	kb
nom	26879	Stovall #1	MCCLURE	38 Jksn	04S-02W-17	SE SE SE	PRDC	4502	----	4577	1123	kb
nom	24251	Tefft #1	COWEN, M. T.	38 Jksn	04S-02W-21	SE SW NE	PRDC	4546	----	4581	1165	kb
nom	23656	Watkin Farms #1	OHIO OIL CO.	38 Jksn	04S-02W-24	SW SW NE	PRDC	4597	----	4650	1051	kb
nom	36529	Moses etal #2-30	JEM PETRO. CORP.	38 Jksn	04S-02W-30	SE NE SW	PRDC	4454	----	4530	1144	kb
nom	36577	Gerlach #4-30	JEM PETRO. CORP.	38 Jksn	04S-02W-30	SE SE SE	PRDC	4412	----	4602	1107	kb
nom	36561	Eisele etal #3-30	JEM PETRO. CORP.	38 Jksn	04S-02W-30	SE SE SW	PRDC	4462	----	4602	1160	kb
nom	36748	Olney etal #3-31	JEM PETRO. CORP.	38 Jksn	04S-02W-31	SE SE NE	PRDC	4331	----	4408	1070	kb
nom	27656	Watson #1	BERMAX OIL CO.	38 Jksn	04S-03W-02	SE SE NE	PRDC	4536	----	4560	1084	kb
nom	25610	Hubbard #1	NANCO INC.	38 Jksn	04S-03W-03	SW SE SE	PRDC	4479	----	4498	1053	kb
nom	22484	Herman #1	DAVIS DRLG. CO.	38 Jksn	04S-03W-06	SE SE NW	PRDC	4456	----	4484	1049	kb
nom	23115	Pittelkow #1	JACKSON, F. R.	38 Jksn	04S-03W-06	SE NW SW	PRDC	4424	----	4478	1043	kb
nom	21883	Posenau-Timmons #1	MT. CARMEL DRLG.	38 Jksn	04S-03W-06	SE NW NW	PRDC	4496	----	4533	1068	kb
nom	22908	Frank #1	RUDMAN, M. B.	38 Jksn	04S-03W-06	SE SE SW	PRDC	4411	----	4464	1028	kb
nom	22731	Cole #1	RUDMAN & MCCLURE	38 Jksn	04S-03W-08	SE NW SW	PRDC	4393	----	4436	1032	kb
nom	22649	Dawson	BELL & GAULT	38 Jksn	04S-03W-15	SE SW SE	PRDC	4430	----	4485	1101	rf
nom	22340	Bugariu-Egrich #1	PULASKI OIL CO.	38 Jksn	04S-03W-16	NW SE NW	PRDC	4366	----	4415	1031	rf
nom	27432	Graham #1-A	COWEN, M. T.	38 Jksn	04S-03W-17	W SE NW	PRDC	----	----	4333	1075	kb
nom	21960	Peterson #2	DAVIS DRLG. CO.	38 Jksn	04S-03W-17	SE NE SE	STPR ?	----	----	4326	1019	kb
nom	22267	Peterson #3	DAVIS DRLG. CO.	38 Jksn	04S-03W-17	SE NE SW	PRDC	4320	----	4375	1007	kb
nom	21920	Howard #1	HUMBLE OIL	38 Jksn	04S-03W-17	NW NW SW	PRDC	4340	----	4350	1013	kb
nom	23520	Frederick #1	KELLY, J.O.	38 Jksn	04S-03W-17	SE NE NW	PRDC	4337	----	4407	1010	kb
nom	23279	Howard #1-A	MASKENY, E. O.	38 Jksn	04S-03W-17	SE NW SW	PRDC	4298	----	4390	1009	rf
nom	23828	Wildt #1-A	FRONTIER PET.	38 Jksn	04S-03W-18	SW NW NE	PRDC	4337	----	4385	1010	kb
nom	24683	Travis #1-A	FRONTIER PET.	38 Jksn	04S-03W-18	NW NW SE	PRDC	4317	----	4350	1009	kb
nom	25039	Knapp-Ross #1	KNAPP, LAUREN	38 Jksn	04S-03W-18	SE SE NW	PRDC	4320	----	4356	991	rf
nom	22159	Iles #1	FRONTIER PET.	38 Jksn	04S-03W-19	SE SW SE	PRDC	4247	----	4300	1017	kb
nom	22247	Day #2	TURNER & MCCLURE	38 Jksn	04S-03W-19	NW NE NE	PRDC	4307	----	4375	1005	kb
nom	22437	Blair #2	DAVIS DRLG. CO.	38 Jksn	04S-03W-20	NW SW SW	STPR ?	----	----	4291	1011	kb
nom	23095	Howard #1	DEVINE, R. W.	38 Jksn	04S-03W-20	NW SW NE	PRDC	4296	----	4375	1024	kb
nom	21439	Blair #2	TURNER & MCCLURE	38 Jksn	04S-03W-20	NW NE SE	STPR ?	----	----	4283	1004	kb
nom	22652	Brainard #1	TURNER PETRO. CORP.	38 Jksn	04S-03W-20	NW NE SE	PRDC	4319	----	4347	1057	rf
nom	23230	Railer #1	KELLY, J.O.	38 Jksn	04S-03W-21	SE SE SE	PRDC	4358	----	4432	1087	kb
nom	23344	Dunham #1	LOVITT, SAMUEL A.	38 Jksn	04S-03W-24	SE SE SW	PRDC	4434	----	4490	1139	rf
nom	22664	Hancock-Loud #1	DAVIS DRLG. CO.	38 Jksn	04S-03W-27	NW NE SW	PRDC	4392	----	4435	1123	kb
nom	22054	Zaremba #1	FULK, PERRY	38 Jksn	04S-03W-28	NW SW NE	PRDC	4355	----	4404	1078	kb
nom	24031	Owen #1	HATHCOCK, LEE A.	38 Jksn	04S-03W-28	NW NE SE	PRDC	4346	----	4397	1105	kb
nom	22921	Hess #1	MARATHON	38 Jksn	04S-03W-28	SE SW SE	PRDC	4323	----	4356	1088	kb

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	28838	Childs #2	MCCULLOCH OIL CORP.	38 Jksn	04S-03W-28	SE SE NE	PRDC	4348	----	4400	1093	kb
nom	22546	Dawson #2	ROVSEK & VOLK	38 Jksn	04S-03W-28	SE NW NW	PRDC	4323	----	4365	1077	kb
nom	21985	Zaremba #1	SMITH PETRO.	38 Jksn	04S-03W-28	SE SE NE	PRDC	4337	----	4356	1091	kb
nom	24364	Dawson #1	VENTURES LTD.	38 Jksn	04S-03W-28	NW SE NW	PRDC	4302	----	4356	1032	rf
nom	22463	Zaremba #A-2	SMITH PETRO.	38 Jksn	04S-03W-29	NW SE SE	PRDC	4237	----	4288	1017	kb
nom	26424	Iles #1	ANCHORE OIL & GAS	38 Jksn	04S-03W-31	NW NE NE	PRDC	4222	----	4242	1028	kb
nom	25793	Dawson #1	NANCO INC.	38 Jksn	04S-03W-32	NW NE SE	PRDC	4210	----	4278	1016	kb
nom	23145	Grabler #2	ROVSEK & VOLK	38 Jksn	04S-03W-32	NE NE NE	PRDC	4241	----	4378	1037	kb
nom	23784	Winfield #1-A	HATHCOCK, LEE A.	38 Jksn	04S-03W-33	SE SW SW	PRDC	4209	----	4260	1028	rf
nom	22952	Rapp #A-6	PURE OIL CO.	38 Jksn	04S-03W-33	NW SW NW	PRDC	4239	----	4335	1021	kb
nom	22740	Rapp #4	ROVSEK & VOLK	38 Jksn	04S-03W-33	SE NW SW	PRDC	4222	----	4429	1035	kb
nom	24233	Rapp #1	ROVSEK, A. E.	38 Jksn	04S-03W-33	NE SW NW	PRDC	4262	----	4323	1052	kb
nom	24283	Rapp #2	ROVSEK, A. E.	38 Jksn	04S-03W-33	SW SW NW	PRDC	4226	----	4278	1022	kb
nom	23831	Weston #2	TROLZ & ASSOC.	38 Jksn	04S-03W-33	NW NE NE	PRDC	4309	----	4374	1092	kb
nom	22957	Heath #1	FULK, PERRY	38 Jksn	04S-03W-34	NW SW SE	PRDC	4317	----	4358	1097	kb
nom	23617	Week #1	LESH, CARL A.	38 Jksn	04S-03W-34	NW NW NW	PRDC	4330	----	4366	1093	kb
nom	23197	Drake #1	TROLZ & LEIGHTON	38 Jksn	04S-03W-34	SE NE SW	PRDC	4310	----	4374	1115	kb
nom	22691	Doan #1	RUDMAN & MCCLURE	38 Jksn	04S-03W-36	SE NE NW	PRDC	4407	----	4471	1145	kb
nom	20572	Todd #1	MCCLURE	39 Kazo	01S-10W-27	NE SE SE	STPR	----	----	4125	916	rf
nom	20103	Hessler #1	CRAWFORD, CLARENCE	41 Kent	09N-10W-27	NW NW SE	STPR	----	----	6508	903	rf
nom	22010	Antezk & Sawyer #1	MCCLURE & AMBASSADOR	46 Lenw	05S-01E-18	SW NW NE	PRDC	4369	----	4430	1092	kb
nom	22517	Earhart #1	BELL & MARKS	46 Lenw	05S-05E-17	NE NE SW	TMPL	3592	----	3645	798	rf
nom	24749	Mohr #1	CALIF. & MARATHON	46 Lenw	06S-03E-30	C SW NE	PRDC	3736	----	3795	853	kb
nom	24515	Mohr #1	CALIFORNIA CO.	46 Lenw	06S-03E-30	C SE NW	TMPL	----	----	3764	872	kb
nom	25095	Jones #1	LAKE STATES ENT.	46 Lenw	06S-03E-30	C SW NW	PRDC	3684	----	3745	863	kb
nom	26538	Garno-Fisher-Wahl #1	B.U.B. OIL CO.	46 Lenw	06S-05E-32	SW SE SE	PRDC	3229	----	3241	684	rf
nom	25052	Borck #1	BAUER BROS.	46 Lenw	07S-01E-28	SE SW NE	PRDC	3568	----	3595	912	rf
nom	22716	Weber #1	PANNELL, H.T.	46 Lenw	07S-01E-29	SW SW SW	PRDC	3530	----	3630	912	kb
nom	26309	Fike #1	MILLER BROS.	46 Lenw	07S-01E-33	NE SE SW	PRDC	3471	----	3554	882	rf
nom	23723	Siegrfried #GG-1	GOOD & GOOD	46 Lenw	07S-01E-34	NE SW SE	PRDC	3395	----	3411	816	rf
nom	21822	Wellnitz #1	DART, J.A.	46 Lenw	07S-01E-36	NW SE NW	PRDC	3458	----	3535	855	rf
nom	28533	Seebruger #1	OCCIDENTAL	46 Lenw	07S-02E-12	NW SW NE	PRDC	3548	----	3575	827	kb
nom	23979	Vanhaerents #1	B.U.B. OIL CO.	46 Lenw	07S-05E-04	NW SW NW	TMPL	3221	----	3246	683	rf
nom	23667	Seidel #1	B.U.B. OIL CO.	46 Lenw	07S-05E-05	SE NE NE	TMPL	3214	----	3251	683	?
nom	8204	Fick #1	LE BLANC, RALPH	46 Lenw	07S-05E-26	S SW SE	STPR-PRDC	3055	----	3128	688	?
nom	24336	Beal #1	BAUER BROS.	46 Lenw	08S-01E-03	NE SW SW	PRDC	3402	----	3448	873	rf
nom	25307	Moore #1	BAUER BROS.	46 Lenw	08S-01E-03	SE SW NW	TMPL	3417	----	3550	858	rf
nom	24951	Moore #2	BAUER BROS.	46 Lenw	08S-01E-03	SW NE SW	PRDC	3406	----	3500	852	rf
nom	23276	Beal #GG-1	GOOD & GOOD	46 Lenw	08S-01E-03	NE NW SW	PRDC	3429	----	3487	874	rf
nom	24035	Moore #1	N. AMER. DRLG.	46 Lenw	08S-01E-03	NE SE NW	PRDC	3432	----	3507	861	rf
nom	24905	Brasher #1	NEYER, JOHN	46 Lenw	08S-01E-28	NE NW NW	PRDC	3263	----	3306	832	rf
nom	28543	Schumacher-Wilczynski #1	OCCIDENTAL	46 Lenw	08S-01E-34	NE SE SW	PRDC	2880	----	2930	713	?
nom	23295	Raymond #1	NEPTUNE O & G	46 Lenw	09S-03E-03	NW NE NE	PRDC	3109	----	3200	752	rf

MAP No	P No	FARM NAME	COMPANY NAME	COUNTY	T-R-S	1/4 SEC	FORMATION	PdC TOP	Pdc BASE	T D	KB/RF/GR Elevation	
nom	24771	Lopez #1	STRAKE	47 Lvng	01N-06E-14	NE SE NW	PRDC	5523	----	5620	928	kb
nom	34878	Wech #1-14	SUKENIK, JOHN T.	47 Lvng	01N-06E-14	NW SW SW	PRDC	5622	----	5707	913	kb
nom	29051	Ganton #1	MUSK.,ROVSEK,MUTCH	47 Lvng	03N-03E-01	NW SW SW	PRDC	5687	----	5695	920	kb
nom	29008	Pellerito #1	COWEN & GORDON	50 Mcmb	04N-13E-29	NE SW NW	TMPL	5050	----	5090	663	kb
nom	25001	Bahr #1	VAN RAALTE	53 Masn	17N-16W-18	SE SE SE	STPR	5832	----	5890	711	rf
nom	27155	Mikula #1	MILLER BROS.	53 Masn	20N-17W-03	GL 11 NW	STPR	----	----	5519	686	kb
nom	22225	Carnagel Oil Ass. #1	JETTER, C. W.	53 Masn	20N-17W-30	SW NE SE	STPR ?	5397	----	5406	666	kb
nom	32224	Carnagel Oil Ass. #2-30	MILLER BROS. & TOTAL	53 Masn	20N-17W-30	SW NE NE	PRDC	5492	----	5498	669	kb
nom	35899	Gilde et al #1-25	PATRICK PETROLEUM	57 Miss	22N-07W-25	SE SE SW	PRDC	10554	----	10802	1215	kb
nom	309	Heinz #5	MUSKEGON OIL CO.	61 Mskg	10N-16W-08	NE NE	STPR ?	4710	----	4754	636	?
nom	23149	Harris-St Grant #1	SIMPSON, C.J.	62 Nwgo	11N-12W-10	NW NW NE	STPR	----	----	6518	812	kb
nom	19086	Leone #1	GRAY & WHYTE	63 Okln	01N-08E-29	SW SW NE	STPR	5407	----	5452	961	rf
nom	22665	Nelson #1	HOLLY OIL EXPL. CO.	63 Okln	04N-07E-09	C NE NE	STPR	----	----	6851	1004	kb
nom	13072	Williams #1	TOP OF MI DEV.CO.	63 Okln	04N-08E-22	SE SW SW	STPR	----	----	6488	1024	?
nom	24087	Peters #1	PURE OIL CO.	64 Ocna	15N-17W-36	C SE NE	STPR	----	----	5531	733	kb
nom	35800	Gray #1-31	WILLMET	67 Oseo	17N-08W-31	NE NW NW	PRDC	9556	----	9769	1153	kb
nom	21529	Helder #1	STRAKE	70 Otwa	05N-15W-11	NE SW NE	STPR	----	----	4220	649	kb
nom	BD	Heinz WDW #1	HEINZ, H.J.	70 Otwa	05N-15W-30	NW SW SE	MNSM	3886	----	5915	602	kb
nom	BD	Heinz WDW #3	HEINZ, H.J.	70 Otwa	05N-15W-30	SW SE SW	MNSM	3892	----	5905	617	kb
nom	------	Holland-Suco Dspsl well	HOLLAND-SUCO COLOR	70 Otwa	05N-15W-30	NE NE NW	MNSM	3934	----	5894	623	kb
nom	20147	Berg #1	FULTON, A.L. CO.	70 Otwa	07N-15W-19	NW NE SW	STPR	----	----	4356	639	rf
nom	35487	St Allis #2-30A	SHELL	71 PsIl	33N-02E-30	NE NW NE	GLND ?	-----	----	6150	829	kb
nom	34957	St Allis #3-30	SHELL	71 PsIl	33N-02E-30	NW SE NW	PRDC	5991	----	6193	857	kb
nom	24722	Sumrack #1	GOLL, GRAVES,MECHLI.	74 StCl	06N-16E-06	C NE NW	PRDC	5356	----	5391	676	rf
nom	11001	Van Antwerp #1	MUELLER BRASS	74 StCl	06N-17E-09	NE SE NW	STPR ?	4898	----	4948	609	gr
nom	25632	Lyle #1	LANPHAR O & G	74 StCl	07N-13E-28	NE SW NW	STPR ?	6294	----	6337	813	kb
nom	00000	Sch. Dev. Syn. Well #2	???????	77 Schl	41N-13W-21	SW NE	MNSM	1325	----	1710	642	gr
nom	00000	Manistique Mun. Dp Well	??????	77 Schl	41N-16W-12	SW SW SW	STPR	----	----	1398	610	gr
nom	9146	Verschure #1	PATTISON, B.P.	77 Schl	42N-16W-14	NW NE NE	STPR	----	----	1050	632	gr
nom	00000	Blaney Park Resort	RODGERS	77 Schl	43N-13W-16	NE SE SE	STPR	----	----	1055	740	gr
nom	00000	Seney Wildlife Ref well	ANDERSON, E.	77 Schl	45N-13W-16	SW SW	STPR	----	----	702	1015	gr
nom	27907	Jelinek-Ferris #1	MOBIL	78 Siwc	05N-02E-05	SE SE NW	PRDC	6959	----	7056	843	kb
nom	20209	Watchorn & Wells #1	RAYBURN, DON	79 Tscl	10N-09E-05	N NE SE	STPR	----	----	9128	873	kb
nom	21370	Geresy #1	TAGGART	80 VnBn	02S-13W-36	SW NE SE	STPR	----	----	3513	825	kb
nom	28655	Widmayer #1	BELL & GAULT	81 Wash	03S-03E-21	C SE SE	TMPL	4807	----	5206	978	rf
nom	27635	Buss & Haab #1	ROVSEK, A. E.	81 Wash	03S-04E-08	NW NE NW	TMPL	----	----	4601	971	kb
nom	27472	Grav #1	ROVSEK, A. E.	81 Wash	03S-04E-08	SW SE NE	TMPL	----	----	4628	957	kb
nom	19231	Buss & Haab #1	SUN OIL	81 Wash	03S-04E-08	SW SE NW	TMPL	----	----	4691	963	gr

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Symbols indicate literature reviewed by individual authors in the preparation of their respective segments of this report.

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