

# NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 191

Summary of the Cities Service Oil Company - Chippewa #1  
Rolette County, North Dakota  
Well No. 1517 - Permit No. 1529

by Jay Garske  
March 1958

Cities Service Oil Company - Chippewa #1, Location: Center NW/4 NW/4  
Section 16, T. 162N. R. 71W. Elevation: 2147 G.L., 2159 K.B., Total Depth:  
3440 feet.

The Cities Service Oil Company - Chippewa #1 was spudded August 17,  
1957; drilled to a depth of 3440 feet, found dry and plugged August 25, 1957.

Logs: Electrical, microlaterolog, and Gamma Ray.

## Cores:

#1 3100-3114  
#2 3114-3130

## Tests:

DST 3393-3437 (Nisku Fm.); Open 1 hour. Recovered: 2325 feet of muddy  
salt water (166,400 PPM.) Pressures: IFP 75#, FFP 950#, SIP 1150# (30 min.),  
HP 1835#.

Casing Record: 10 3/4" casing set at 548 feet with 425 sacks of cement.

## Plugging Record:

3383' 20 sacks cement  
3108' 20 sacks cement  
2248' 20 sacks cement  
553' 20 sacks cement

Top of surface casing - 5 sacks cement and 10 3/4" stoll cap installed.

Formation tops were determined from samples and electric logs, corrected  
to the electric logs. Doubtful or obscure formations were not picked. Colors  
and descriptive numbers were taken from the Goddard, et. al., 1951 Rock Color  
Chart distributed by the Geological Society of  
America, New York, N.Y.

## FORMATION TOPS

### Cretaceous System

Niobrara formation	1522
Greenhorn formation	1888
Basal Cretaceous sandstone	2285

### Jurassic System

Rierdon formation	2603
Piper limestone	2780

Triassic System		
	Spearfish formation	2986
Mississippian System		
	Lodgepole formation	3111
	Englewood formation	3348
Devonian System		
	Lyleton formation	3358
	Nisku formation	3380

0-90	Glacial sand, fine to very coarse grained, subangular to rounded, composed mainly of vitreous quartz, and limestone, varicolored, some shale pebbles, greenish gray 5GY6/1.
90-120	Glacial shale pebbles and some sand, as above.
120-300	Glacial sand as above, and gravel, composed mainly of angular to rounded granules and pebbles of quartz, limestone and shale.
300-450	Glacial sand and gravel as above, and little brownish black to black lignite.
450-480	Glacial sand and little lignite, as above.
480-510	Glacial sand, fine to very coarse grained, angular to rounded, mostly quartz, clear vitreous, little frosted, some varicolored limestone, and much gravel, composed mainly of subangular to well rounded granules and pebbles of quartz, limestone, and chert, varicolored.
510-615	Glacial gravel, varicolored.
615-720	Poor samples, mostly cement, little greenish gray shale, 5GY6/1.
720-810	Shale, olive gray to dark greenish gray 5GY4/1, lumpy, compact.
810-840	Shale, greenish gray 5GY6/1, lumpy to fissile, compact.
840-870	Shale, greenish gray and medium gray to grayish black, fissile.
870-1380	Shale, greenish gray 5G6/1, fissile, compact.
1380-1470	Shale, greenish gray 5GY6/1, dark gray, and some olive gray, lumpy, soft to compact.
1470-1530	Shale, as above, and some lumpy, soft black shale.
1530-1560	Shale, greenish gray and medium dark gray to black, fissile to lumpy, compact, some with soft white calcareous specks.
1560-1680	Shale, greenish gray and medium dark gray to grayish black, mostly lumpy, spongy, bentonitic, little fissile, compact.
1680-1890	Shale, fissile, compact as above and little lumpy as above.
1890-1920	Shale, as above and little limestone, very fine fragmental, composed of angular to subrounded fragments of prismatic calcite, yellowish gray to light olive gray, and numerous Inoceramus prisms.
1920 -1950	Shale, light gray to grayish black, lumpy to fissile, compact, some with soft white calcareous specks, little limestone and numerous Inoceramus prisms, as above.
1950-1980	Shale, dark gray to black fissile, compact, little with soft white calcareous specks, and little limestone as above.
1980-2040	Shale, greenish gray 5GY6/1, and dark gray, fissile to lumpy, compact.
2040-2130	Shale, as above and abundant Inoceramus prisms.
2130-2280	Shale, light greenish gray 5GY8/1 to greenish gray 5G6/1, and medium gray to grayish black, fissile to lumpy, compact.
2280-2290	Shale, as above and few pieces of very fine grained, sandstone, friable, calcareous, light gray.
2290-2310	Shale, as above.

2310-2380 Shale, as above and few pieces of very fine grained sandstone, friable, calcareous, light gray.

2380-2510 Shale, medium gray to grayish black, and greenish gray 5G6/1, fissile, compact, some crystalline gypsum, very pale orange to grayish orange 10YR7/4, some snowy, earthy, white gypsum and little sandstone as above.

2510-2680 Shale and little gypsum as above, and some sandstone, very fine grained, silty in part, friable, calcareous, greenish gray 5GY6/1, light gray, and light brownish gray to brownish gray.

2680-2780 Shale as above to pale reddish brown, with little gypsum and sandstone, as above.

2780-2790 Limestone, chalky, anhydritic, very pale orange, and some shale as above.

2790-2800 Shale cavings.

2800-2810 Limestone, very fine granular, chalky in part, scattered pinpoint porosity, very pale orange, some very fine crystalline, dense, very pale orange limestone, and some shale, medium gray to grayish black, greenish gray and pale reddish brown to dark reddish brown, fissile, compact.

2810-2860 Limestone as above to pale yellowish brown, and much shale as above.

2860-2890 Limestone, very fine crystalline, dense, very pale orange to pale yellowish brown, and much shale as above.

2890-2900 Shale cavings.

2900-2920 Limestone, very fine crystalline, dense, mostly pale yellowish brown, little very pale orange, and some shale as above.

2920-2940 Limestone and shale as above, and some crystallized to earthy, white anhydrite.

2940-2985 Anhydrite, fine crystalline, earthy in part, white, some shale, dark gray, and greenish gray, fissile, compact, and some limestone, as above.

2985-2995 Shale, silty, pale reddish brown, compact, some anhydrite shale and limestone, as above.

2995-3030 Shale, pale reddish brown to dark reddish brown, silty in part, compact, some greenish gray to light olive gray and medium dark gray shale, fissile, compact, and little caved anhydrite and limestone from above.

3030-3070 Shale, and little anhydrite, as above some sandstone, very fine to fine grained, friable, anhydritic, moderate reddish orange to moderate reddish brown, and some loose quartz, medium to coarse grained, subrounded to well rounded, frosted, colorless and tinted reddish brown.

3072 Circulation sample: 1/2 hour: Sandstone and loose quartz grains as above, and some shale and anhydrite as above.

3070-3075 Sandstone, loose quartz, shale, and anhydrite as above.

3076 Circulation sample; 1/2 hour: As above.

3075-3080 As above.

3083 Circulation sample; 1/2 hour: As above.

3080-3100 Sandstone, loose quartz, shale and anhydrite as above.

Core #1 (3100-3114)

3100-3105 Siltstone, well cemented, anhydritic, slightly calcareous, pale reddish brown.

3105-3109 Siltstone, as above with some included medium sized, rounded to well rounded, frosted, pale reddish brown quartz grains.

3109-3110 Siltstone, anhydritic, well cemented, calcareous, grayish red 10R4/2 to dark reddish brown with included medium sized rounded to well rounded, frosted, reddish brown quartz grains.

3110-3111 Sandstone, fine to medium grained, rounded to well rounded, frosted, anhydritic, calcareous, pale reddish brown to dark reddish brown.

3111-3112 Sandstone as above, little anhydritic limestone, dense, pale red 10R6/2 and very dark red 5R2/6 and some fragmental limestone, dense pale yellowish brown.

3112-3113 Limestone, fragmental, chalky in part, dense, fossiliferous, light greenish gray to greenish gray 5GY6/1 and moderate red 5R4/6.

3113-3114 Limestone, fragmental, dense, fossiliferous, very pale orange to pale yellowish brown, and moderate red 5R5/4.

#### Core #2 (3114-3130)

3114-3115 Limestone, fine crystalline to medium fragmental, dense, light greenish gray and moderate pink.

3115-3116 Limestone, fine crystalline, dense, very pale orange, flecked with dark yellowish orange iron stain.

3116-3117 Limestone, fine crystalline to medium fragmental, dense, fossiliferous, light greenish gray, moderate red and dark yellowish orange.

3117-3118 Limestone, fine crystalline, dense, fossiliferous, very pale orange.

3118-3119 Limestone, fine to medium fragmental, dense, very pale orange.

3119-3120 Limestone, as above to fine crystalline, dense, very pale orange and moderate red 5R5/4.

3120-3121 Limestone, fine crystalline to medium fragmental, dense, grayish orange pink 10R8/2.

3121-3122 Limestone, fine crystalline, dense, light greenish gray and little white chalky limestone with fair porosity.

3122-3124 Limestone, medium fragmental, dense, very pale orange to pale yellowish, brown.

3124-3125 Chert, grayish orange pink 10R8/2.

3125-3126 Limestone, fine crystalline, dense, very pale orange.

3126-3127 Limestone, medium fragmental, dense, fossiliferous, very pale orange.

3127-3130 Limestone, fine crystalline, dense, very pale orange.

#### Samples

3130-3150 Limestone, fine crystalline to very fine granular, dense, very pale orange to pale yellowish brown.

3150-3160 Limestone as above and little grayish pink chert.

3160-3210 Dolomite, cryptocrystalline, dense, grayish pink 5R8/2 to pale red 5R6/2, some limestone, very fine crystalline, to very fine granular dense, very pale orange and grayish orange pink 10R8/2 and little chert, grayish pink to pale red.

3210-3230 Limestone, very fine crystalline to very fine granular, dense, very pale orange to pale yellowish brown, and some chert white to grayish orange pink 10R8/2.

3230-3280 Limestone, very fine granular, chalky in part, and some dolomite, cryptocrystalline, dense, white, very pale orange, and grayish orange pink 10R8/2.

3280-3330 Limestone, dolomitic, fine crystalline to cryptocrystalline, dense, grayish orange pink and very pale orange.

3330-3350 Limestone, very fine granular and fine crystalline, dense, grayish orange pink and very pale orange.

3350-3360 Shale, medium gray to grayish black, fissile compact, little moderate reddish brown 10R4/6 to dark reddish brown 10R3/4 shale, compact and some cavings from above.

3360-3370 Shale, moderate reddish orange 10R6/6, and moderate reddish brown to dark reddish brown, fissile to lumpy, compact to spongy, calcareous, many lumps with included dark gray shale fragments, also little greenish gray, fissile, compact shale.

3370-3380 Shale, as above and some dark gray shale cavings.

3380-3390 Limestone, dolomitic, microsugrosic, dense, moderate pink 5R7/4.

3390-3395 Limestone as above, some white, sugary anhydrite, and some grayish black, shale cavings.

3395-3405 Limestone, fine crystalline, dense, grayish orange pink 5R7/2, and much dolomitic limestone, microsugrosic, dense, white and grayish pink to pale red 5R6/2.

3409 Circulation sample; 3/4 hour: Dolomite, calcitic, sugrosic, fair interstitial porosity, very pale orange to pale yellowish brown.

3405-3420 Dolomite, as above.

3420-3440 Dolomite as above, and some limestone, cryptocrystalline, dense, grayish orange pink 5YR7/2.

3440 Circulation sample; 1 hour; Limestone, dolomitic, sugrosic, fair interstitial porosity, pale yellowish brown to dark yellowish brown.

3440 Total depth.