Summary of the Phillips Petroleum Co. - Glenn Brandt #1
Bottineau County, North Dakota
Well No. 2596 - Permit No. 2608

by William P. Eastwood
January 1961

Phillips Petroleum Co. Glenn Brandt #1 located in SE 1/4, NW 1/4,

The drilling permit was issued on February 19, 1960. The well was drilled to a total depth of 6248 feet. The well was a dry hole and was plugged and abandoned on April 3, 1960.

Drill Stem Tests: None

Casing Record:
355 feet of 10 3/4" O.D. Surface casing with 185 sacks, cut off below plow depth.

Plugging Record:
Neat cement plugs spotted at following depths:
  15 sacks at 6200   15 sacks at 3735
  15 sacks at 6000   15 sacks at 3500
  15 sacks at 5200   15 sacks at 2420
  15 sacks at 5050   25 sacks at 359
  15 sacks at 4400   5 sacks at 4
  15 sacks at 4200

Surface casing cut off below plow depth, pits filled, and location leveled.

Mechanical Logs:
Schlumberger Induction - Electrical 359-6240
Schlumberger Microlaterolog - Microcaliper 3500-6242

Core Record:
1. Winnipegosis 6075-6103 - Full recovery.

The formation tops were determined by samples and mechanical logs. Color names used are those of the Rock Color Chart of the National Research Council. Limestone Petrography terms are those proposed by Folk (1959) Bull. Amer. Assoc. Petroleum Geologists, Vol. 43, No. 1, PP. 1-38.

FORMATION TOPS

Cretaceous
Greenhorn formation 1898
Mowry formation 2184
Fall River formation 2402
Triassic
- Spearfish formation 3472
- Pre-Mesozoic Unconformity 3725

Mississippian
- Ratcliffe interval 3725
- Midale subinterval 3833
- Frobisher-Alida interval 3873
- "X" Salt Bed 3947
- Base Frobisher-Alida Anhydrite 4100
- Tilston interval 4210
- Bottineau interval 4396
- Bakken Formation 5003

Devonian
- Three Forks formation 5020
- Birdbear formation 5104
- Duperow formation 5195
- Souris River formation 5602
- Dawson Bay formation 5838
- Prairie formation 6000
- Winnipegosis formation 6018

Silurian
- Interlake formation 6217 (?)

Description of Samples and Core Chips:
Most of samples badly caved.

0-140 Medium to fine loose quartz sand grains, rounded to subrounded. Rare to common reddish quartzite, silty at top becomes cleaner toward base. Rare to rounded particles of igneous rocks.

140-180 As above with common coarse subrounded fragments of igneous rocks.

180-220 Coarse subrounded fragments of igneous rocks. Common medium angular to rounded quartz grains.

220-240 Medium to dark gray sandy shale.

240-340 Medium gray sandy shale.

340-380 Dark gray, slightly micaceous shale. Rare to common, medium gray shale as above.

380-400 Light gray fissile clayey shale.

400-480 All three kinds of above shales. Probably cavings.


1520-1700 Common gray shale as above with common black shale as above. Amount of light gray shale decreases downward.

1898 Top of Greenhorn formation


1980-2020 Black shale as above with common "speckled shale".

2184 Top of Mowry formation
2402 Top of Fall River formation
2020-2650 Black shale as above. “Speckled shale” at 2220-2260, and at 2400-
2420. Large quartz fragments at 2500-20 which are probably
cavings. Rare fragments of medium to fine grained white friable
sandstone. Common bentonite 2520-30. Rare light olive gray waxy
shale at 2580-90.
2650-2750 Black shale as above. Rare fine grained white friable quartz
sandstone. Coarse-grained quartz cavings at 2720-50.
2750-2850 Common very fine grained white sandstone. Black shale as above.
2850-3010 Black shale as above. Common sandstone at 2880-90 and 2900-10.
Rare white pelletoidal and sandy (?) limestone at 2910-2990.
Rare medium gray fine grained sandstone at 2960-70.
3010-3020 Black shale as above with limestone as above.
3020-3090 Medium light gray shale with common black shale and rare limestone
as above.
3090-3140 As above with light olive gray shale. Rare moderate red shale.
Rare white fine grained calcareous quartz sandstone at 3110-40.
3140-3210 Shale as above with common sandstone as above and rare white sandy
limestone.
3170-3210 As above with common moderate red shale and common light olive
gray shale.
3210-3240 Mixtures of above shales with common white sublithographic limy
dolomite.
3240-3250 Common light gray shale with rare dark greenish yellow shale.
3250-3320 Gray shale as above with common pale yellowish brown slightly
pelletoid fine crystalline to sublithographic limestone.
3320-3470 Abundant black fissile shale, common limestone as above. Rare pale
yellowish brown sandy shale.
3470-3500 Shale and limestone as above with rare to common moderate red
shale.
3500-3640 Black fissile shale and brown sandy shale. Rare limestone. Rare
to common moderate red shale. Rare moderate red fine-grained silty
sandstone.
3640-3700 Black shale cavings as above. Common moderate red sandstone as
above.
3700-3740 Light brown to moderate red shale. Rare moderate red sandstone.
Black shale cavings.
3740-3820 Black and brown shale as above with common pale olive very sandy
shale which contains rare ostracodes.
3820-3860 Badly caved as above. Rare pieces of pale yellowish brown
pelmicrosparite limestone.
3860-3900 Top of Midale subinterval
3900-3920 Very pale orange finely granular limestone. Rare white anhydrite.
Badly caved. Rare dark yellowish brown granular limestone at 3890-
3900.
3920-4080 As above with rare pale bluish anhydrite. Rare pale yellowish
brown sublithographic limestone, microlaterolog indicates a salt
bed at 3947-3984.
4100 Base of Frobisher-Alida Anhydrite
4080-4107 Abundant white anhydrite. Badly caved.
4107 Circulation sample. Cavings as above. Rare moderate yellowish brown granular limestone.
4107-4160 Black shale and anhydrite cavings as above. Rare pale yellowish brown pelmicrosparite limestone. No stains. Also rare moderate to pale yellowish brown micrite limestone with pinpoint porosity.

4210 Top of Tilston interval
4160-4240 Very pale orange micrite, and microsparite limestone with fair pinpoint porosity. Badly caved. Rare pelmicrite and oomicrite limestone with good porosity from 4180 on down.
4240-4260 Limestone, as above but less pinpoint and intergranular porosity. Very little black shale cavings. Pale blue slightly limy anhydrite at 4250-60.
4260-4290 Limestone as above with common very light gray microsparite dolomitic limestone. No oomicrite limestone.
4290-4340 Pale yellowish brown micrite, microsparite, and pelmooomicrite limestone. Pelmooomicrite limestone has fair intergranular porosity. Moderate yellowish brown oosparite limestone at 4310-40.
4340-4370 Pale yellowish brown limestone as above. Common moderate yellowish brown finely granular limestone with good intergranular and pinpoint porosity.

4396 Top of Bottineau interval
4370-4400 As above with rare to common poorly cemented intrapelmicrite limestone.
4400-4450 As above with rare moderate yellowish brown microsparite limestone. Common black shale cavings.
4450-4470 Common pale yellowish brown microsparite limestone as above. Common moderate yellowish brown intrasparite limestone with coarse calcite. Very rare porous oosparite.
4470-4590 Common to abundant very pale yellowish brown microsparite limestone. Rare coarsely crystalline intrasparite as above at 4490-4510. Common black shale cavings.
4590-4630 As above with rare to common moderate yellowish brown intrapelsparite limestone. Rare dark yellowish brown sublithographic limestone.
4630-4790 As above with common intrapelsparite limestone. Fair intergranular porosity.
4790-4830 Abundant moderate yellowish brown to moderate gray intrasparite limestone. Fair intergranular porosity.
4830-4980 As above with rare to common moderate yellowish brown sublithographic limestone. Common moderate gray pelmicrite limestone.

5003 Top of Bakken formation
5020 Top of Three Forks formation
4890-5050 Limestone as above. Common large black shale fragments.
5050-5070 Shale and limestone as above with common very pale yellowish brown to very pale orange finely granular limestone.
5070-5090 As above with rare moderate red shale.
5104 Top of Birdbear formation
5090-5240 As above, common to abundant red shale.

5195 Top of Duperow formation
5240-5300 Common moderate to pale yellowish brown finely granular to pelmicrite limestone. Common black shale cavings (?). Common medium gray pelmicrite limestone. Some of the yellowish brown limestone has rare pinpoint pores. Rare pale yellowish brown pelmicrite with small patches of sparite.

5300-5420 As above. Rare to common moderate yellowish brown pelmicrite. Black, green and red shale cavings.

5420-5460 Abundant yellowish brown pelmicrite and pelmicrite. Rare to common moderate pelmicrite with small patches of sparite.

5460-5550 Abundant pelmicrite with some sparite calcite, good pinpoint porosity. Common very pale orange microsparite limestone as above.

5550-5580 Abundant very pale orange pelmicrite and pelmicrite. Rare to common moderate yellowish brown pelmicrite and pelmicrite as above.

5602 Top of Souris River formation
5580-5620 As above with rare medium gray finely granular limy dolomite.

5620-5740 Moderate to pale yellowish brown pelmicrite and pelmicrite with good intergranular porosity. Rare gray finely granular limy dolomite. Very rare ostracodes in the pale yellowish brown limestone. Rare pale yellowish brown sublithographic limestone.

5740-5820 Common limestone as above. Common moderate to pale yellowish brown finely granular slightly limy dolomite.

5838 Top of Dawson Bay formation
5820-5890 Abundant dolomite as above. Rare limestone as above. Fair pinpoint porosity. Common moderate yellowish brown medium crystalline dolomite.

5890-5930 Abundant finely granular dolomite, as above. Common medium crystalline dolomite, as above. Good intergranular porosity and permeability in the medium crystalline dolomite. Rare moderate yellowish brown limestone.

5930-5980 Abundant medium crystalline dolomite, as above, rare fine crystalline dolomite, as above.

5980-6000 Dolomite, as above with common pale yellowish brown micrite and microsparite limestone.

6000 Top of Prairie formation
6000-6015 Dolomite as above, rare limestone.

6015 15 minutes circulation. Dolomite as above. Common limestone.

6018 Top of Winnipegosis formation
6015-6050 Abundant dark yellowish brown medium crystalline dolomite with good intergranular porosity and permeability. Common pale yellowish brown pelmicrite limestone. Rare light brown anhydrite. Black shale cavings (?) in sample at 6020-6050. No anhydrite below 6030.

6050-6075 Abundant limestone as above, common dolomite as above. Common black shale.
6075-6103  Samples missing.

6103-6150  Dolomite, pale yellowish brown to very pale orange, medium crystalline. Good intercrystalline porosity and permeability. Rare moderate yellowish brown microsparite limestone.

6150-6230  Abundant dolomite, as above, common limestone as above. A few pieces of lost circulation material (mica) at 6180-6190. A few pieces of very pale pink limy dolomite at 6225-6230.

6217  Top of Interlake formation

6230-6248  Abundant yellowish brown dolomite and limestone as above. Rare very pale pink dolomite as above. Rare to common very pale orange to white sublithographic limestone. Very rare moderate red medium crystalline dolomite (Ashern lithology?).

Total Depth - 6248. 6246 driller.