

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 172

Summary of the Sohio Petroleum Company - M. J. Burns #1  
Renville County, North Dakota  
Well No. 1098 - Permit No. 1110

by James Peterson  
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Sohio Petroleum Company M. J. Burns No. 1, Renville County, North Dakota. Location: C SW SW Sec. 17-163N., 85W., Elevation: 1715 ground, 1725 K.B.

The Sohio Petroleum Company M. J. Burns No. 1 was spudded March 12, 1956, drilled to a total depth of 5091', found dry and was plugged March 28, 1956.

Logging Record:

Gamma ray-neutron, electrical log, lateral log, microlaterolog by Schlumberger.

Coring Record: 4540-4548; 4548-4601

Testing Records:

DST #1 4532-4548', open 1 hour, shut in 1/2 hour. Recovered 30' mud, 90' oil and gas cut mud, 180' heavily oil and gas cut sulphur saltwater, 750' slightly oil and gas cut salt water. FP 10#-545#, SIP 1975#, HP 2475#.

DST #2 4694-4704', open 2 hours, shut in 1/2 hour. Recovered 30' watery drilling mud, 990' sulfurous saltwater. FP 130#-500#, SIP 2050#, HP 2625#.

Casing Record:

460 feet of 10 3/4" surface casing with 325 sacks cement.

Plugging Record:

Plug #5 top of surface	5 sacks cement.
Plug #4 403- 500	50 sacks cement.
Plug #3 2886-2956	25 sacks cement.
Plug #2 4252-4312	25 sacks cement.
Plug #1 5047-5091	15 sacks cement.

Formation tops were determined from samples and logs. Doubtful or obscure formation tops were not picked. Color names and identifying numbers were taken from the 1948 Rock-Color Chart distributed by the National Research Council, Washington, D.C.

FORMATION TOPS

Cretaceous System

Pierre formation	610
Niobrara formation	2115
Greenhorn formation	2424
Basal Cretaceous sandstone	2960

Jurassic System		
	Morrison formation	3335
	Piper formation	3835
Triassic System		
	Spearfish formation	4095
Mississippian System		
	Charles formation	4290
	Mission Canyon formation	4615
	Mission Canyon 2	4808
	Lodgepole formation	4995

400-430	Shale, medium light gray, lumpy, soft to fairly compact.
430-460	Shale, pale yellowish brown, fairly compact, silty, calcareous.
460-490	Shale as in 400-430 interval. Sand grain inclusions.
490-500	Sand grains, very coarse, sub-round to sub-angular; chert fragments, dolomite fragments, yellowish gray, rounded.
500-530	Lignite, shale, pale red, compact, calcareous; chert fragments.
530-590	Sandstone, very light gray, medium grained, grains predominantly sub-angular quartz, some magnetite. Calcareous cement.
590-620	Shale, light gray, sandy to silty.
620-650	Shale, light gray, irregular fragments, slightly silty.
650-820	Shale, light gray to light brown (5YR6/4), as above.
820-860	Shale, medium light gray, platy to irregular. Occasional dolomite fragments, very light gray, sublithographic.
860-920	Shale, medium light gray to medium dark gray, lumpy irregular fragments.
920-1010	Shale, medium light gray, massive, compact. Scattered white bentonite fragments.
1010-1100	Shale as above; shale, medium light gray, lumpy, irregular, slightly bentonitic; shell fragments.
1100-1130	Shale as above; scattered limestone fragments, very light gray, sublithographic.
1130-1330	Shale as above.
1330-1370	Shale, medium light gray, massive, compact.
1370-1460	Shale, medium light gray, lumpy irregular fragments, white, bentonite specks; shale as above.
1460-1520	Shale, medium light gray, compact, massive; dolomite, brownish gray, sublithographic, subcrystalline.
1520-1610	Shale as above.
1610-1700	Shale, medium gray to medium dark gray, lumpy irregular fragments; shale as above.
1700-1880	Shale, medium light gray, lumpy, irregular, white bentonite specks.
1880-1920	Shale, medium gray to medium dark gray, irregular fragments, white bentonite.
1920-2000	Shale, medium gray, lumpy, very bentonitic.
2000-2060	Shale, medium gray, platy, soft, occasional bentonite specks.
2060-2090	Shale, medium gray to medium dark gray, platy, soft.
2090-2150	Shale, medium dark gray, platy. Soft, white, calcareous inclusions.
2150-2180	Shale, medium gray, platy to lumpy, partly bentonitic.
2180-2280	Shale, medium gray to medium dark gray, platy, shell fragments.
2280-2420	Shale, medium dark gray, platy, calcareous; shale, medium gray, platy with light olive gray staining.

2420-2500 Shale, medium dark gray, platy to massive, soft white calcareous specks. Shell fragments, Inoceramus prisms.

2500-2540 Shale as above; shale, medium light gray to medium dark gray, platy, soft; limestone fragments, light gray, argillaceous, crystalline.

2540-2620 Shale, medium light gray to medium dark gray, platy, light olive gray staining.

2620-2710 Shale, medium dark gray, platy to medium light gray, platy, light olive gray staining.

2710-2940 Shale as above; shale, medium light gray, soft, platy to lumpy, slightly bentonitic in part.

2940-2960 Silty, very fine grained sandstone, light gray, shaley; shale as above.

2960-2980 Quartz sandstone, medium grained, rounded to sub-angular, colorless, calcareous cement. Occasional quartz granules. Sandstone as above.

2980-3000 Loose quartz sand, colorless, medium to coarse grains, rounded to sub-angular, shaley.

3000-3040 Loose quartz sand, medium grained, colorless, rounded to sub-angular.

3040-3070 Shale, medium light gray to medium dark gray, platy, soft.

3070-3110 Sandstone, pale yellowish brown, fine to very fine grained, sub-angular, silty.

3110-3220 Shale, medium light gray to medium dark gray, platy, soft, sandstone, pale yellowish brown to white, fine grained, parts shaley.

3220-3300 Free sand grains; medium to very coarse, sub-round to sub-angular, frosted grains, colorless to grayish yellow.

3300-3350 Shale, medium light gray to medium dark gray, platy; sandstone, very light gray, very fine grained.

3350-3390 Shale, medium light gray to medium dark gray, platy, soft. Occasional medium gray limestone, lithographic, fragmental.

3390-3410 Shale as above; white bentonitic fragments.

3410-3430 Shale as above.

3430-3510 Shale as above; shale, greenish gray (5G6/1) platy to fissile.

3510-3530 Shale as above; shale, grayish red (5R6/2) platy to fissile.

3530-3550 Shale as above; siltstone, light gray, glauconitic.

3550-3630 Shale as above, occasional limestone, light gray, granular to fragmental; limestone, light brown, sublithographic, sub-crystalline.

3630-3660 Shale, moderate brown (5YR3/4), platy to greenish gray, platy to fissile.

3660-3670 Shale as above; limestone, very light gray, fragmental.

3670-3730 Sandstone, very fine grained, very light gray to yellowish gray, shale as above.

3730-3780 Sandstone, very light gray, fine grained, calcareous cement, shale as above.

3780-3830 Shale, moderate brown (5YR3/4) to greenish gray (5GY6/1), fissile, shale, medium light gray, fissile.

3830-3860 Dolomitic limestone, very light gray, sublithographic, very fine granular texture, some pinpoint porosity.

3860-3880 Dolomitic limestone as above, interbedded sandstone, very light gray, fine sub-angular grains, calcareous cement.

3880-3900 Limestone, very light gray, sublithographic, subcrystalline.

3900-3980 Limestone, very light gray, sublithographic, very fine granular to sublithographic.

3980-4010 Limestone as above; secondary white, crystalline, anhydrite replacement.

4010-4100 Calcitic dolomite, yellowish gray, (5Y8/1), lithographic, sub-crystalline. Secondary anhydrite replacement as above.

4100-4120 Shale, grayish red (10R4/2), compact, some fragments with inter-bedded anhydrite.

4120-4180 Siltstone, moderate reddish orange, calcareous cement, friable. Some interbedded, crystalline, white anhydrite. Occasional very light gray, subcrystalline, sublithographic limestone fragments.

4180-4210 As above. Some fragments sandy.

4210-4240 Sandy siltstone as above; limestone, very light gray, sub-crystalline, sublithographic.

4240 Samples predominantly sandy siltstone, moderate reddish orange, anhydritic. Limestone as above.

4248-4250 Core chips. Limestone, very light gray, subcrystalline, sublithographic with secondary recrystallization and calcite plugging of vugs.

4250-4290 Samples. Siltstone as above. Limestone as above. Sand grains.

4290-4300 Dolomite, very light gray, very fine granular texture, dense.

4300-4330 Anhydrite, light gray, subcrystalline, slightly silicious tight, dolomitic.

4330-4350 Limestone, yellowish gray (5Y8/1), fine grainy texture, small vugs, good porosity.

4350 Limestone, very light gray, subcrystalline, sublithographic, compact. Limestone as above.

4380-4400 Anhydrite, light olive gray to light gray, subcrystalline, dense.

4400-4410 Limestone, very light gray, very fine granular texture, sublithographic.

4410-4430 Anhydrite, light gray, dense.

4430-4450 Limestone, very light gray, subcrystalline to very fine granular, sublithographic.

4450-4460 Limestone, light gray, grainy to fragmental, lithographic.

4460-4500 Limestone, white, sublithographic, subcrystalline, chalky.

4500-4510 Limestone, medium light gray, fragmental to oolitic, sharp angular fragments.

4510-4550 Limestone, very light gray, as above.

Core Chips

4550-4559 Limestone, very light gray, subcrystalline matrix, oolitic, sublithographic, secondary calcite replacement, fossiliferous.

4560-4562 Limestone, very light gray, very oolitic, calcite filling in fractures and vugs.

4562-4563 Limestone, very light gray, pisolitic, vugs partially filled by calcite crystals. Gypsum filling in fractures.

4563-4566 Limestone, very light gray, oolitic to pisolitic, vugs filled or partially filled by calcite crystals.

4566-4583 Limestone, very light gray, oolitic, vugs filled or partially filled by calcite, fractures with crystalline calcite. Traces of gypsum.

4583-4591 Limestone, very light gray, oolitic, good vugular porosity.

4591-4594 Limestone, light olive gray, oolitic, vugs filled or partially filled by calcite crystals.

4594-4598 Limestone, light olive gray, oolitic, vugs filled by calcite.  
4598-4600 Calcareous sandstone, very light gray, very fine sub-round to sub-angular grains.  
4600-4601 Limestone, light gray, oolitic, vugs filled with crystalline calcite.  
4601-4630 Samples. Limestone, very light gray to light gray, as above.  
4630-4690 Limestone, very light gray, very fine grainy texture, some oolites, small partially closed vugs by secondary calcite.  
4690-4710 Limestone, very light gray, fine grainy oolitic texture, fair porosity.  
4710-4750 Limestone, light gray, grainy, argillaceous, occasional very thin shale streaks, good porosity.  
4750-4790 Limestone, very light gray, very fine grainy oolitic structure, secondary calcite replacement. Cavings.  
4790-4810 Limestone, light gray, fine granular to crystalline texture, slightly vuggy.  
4810-4850 Limestone, very light gray, fine granular, slightly oolitic texture.  
4850-4870 Limestone, very light gray, fine granular, sublithographic.  
4870-4900 Limestone, light olive gray, fine granular texture, argillaceous.  
4900-4930 Limestone, very light gray, fine grainy texture, sublithographic, fair porosity.  
4930-5000 Limestone, very light gray to light gray, fine granular, oolitic to fragmental texture.  
5000-5080 Limestone, medium light gray, crystalline to fragmental texture, very fossiliferous.