

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 253

Summary of the Anschutz Oil Company - Oscar Bakken No. 1
Burke County, North Dakota
Well No. 2214 - Permit No. 2226

By Clarence G. Carlson
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The Anschutz Oil Company - Oscar Bakken #1 well is located in the center SW NW of Section 3, T. 161N., R. 92W., Burke County, North Dakota. Elevations: K.B. 2074; G.L. 2061.

The Anschutz Oil Company - Oscar Bakken No. 1 well was spudded March 16, 1959, drilled to a total depth of 6,858 feet and completed as the discovery well of the Black Slough field on May 4, 1959.

Logs Run:

Laterolog-Gamma Ray
Radioactivity
Microlaterolog

Cores: 6726-6690

Tests:

DST 1; 6732-6754; Initial shut-in 45 minutes, tool open 2 hours, final shut-in 45 minutes, tool opened with fair blow, strong in 1 1/2 minutes, intermittent gas after 1 hour and 40 minutes, no flare. Recovered 185 feet of very slightly oil and gas cut mud with sulphurous odor, 428 feet of gas cut sulfur water. Pressures: ISIP 2919; FSIP 2489; IHP 3770, FHP 3757, IFP 66, FFP 303.

DST 2; 6758-6779; Initial shut-in pressure 45 minutes, tool open 1 hour and 20 minutes, final shut-in 45 minutes. Gas to surface in 7 minutes, burned 20 foot flare. Fluid flowed in 1 hour and 5 minutes, flowed clean oil in 1 hour and 11 minutes, no visible water. Recovered 950 feet of free oil, 30 feet of oil cut mud. Pressures: ISIP 2912, FSIP 2912, IFP 375, FFP 904, IHP 4076, FHP 3854. Oil grindout .4% water, 37.2° A.P.I. gravity, corrected.

Casing and completion:

8 5/8 inch surface casing set at 503 feet with 322 sacks of cement
5 1/2 inch casing set at 6,857 feet with 300 sacks of cement

Perforated the intervals from 6763 to 6765 and 6767 to 6770 with 3 shots per foot. Acidized with 250 gallons of mud acid.

Initial potential test:

315 barrels of oil per day, .8% water, 37.6° A.P.I. flowing, 14/64" choke, flowing pressure 800 lbs/in.

Formation tops were determined from samples and mechanical logs; tops were corrected to Laterolog-Gamma Ray logs. Colors were determined by use of the Rock Color Chart distributed by the Geological Society of America. Not all formation tops were picked in the following list.

FORMATION TOPS

Cretaceous System	
Pierre formation	1403
Greenhorn formation	3652
Mowry formation	3926
Fall River formation	4257
Jurassic System	
Sundance formation	4636
Piper limestone	5307
Triassic System	
Spearfish formation	5604
Mississippian System	
Kibbey sandstone	5950
Kibbey limestone	6037
Madison group	6218
Poplar interval	6218
Ratcliffe interval	6521
Frobisher-Alida interval	6762
518-550	Sandstone, very light gray, very fine to fine grained, calcareous, argillaceous.
550-580	Lignite, some sandstone, as above.
580-730	Lignite, siltstone, very light brownish gray, soft, calcareous.
730-760	Lignite, some siltstone, as above; some sandstone, very light gray very fine to fine and medium grained, calcareous.
760-1120	Sandstone, very light gray, very fine to fine grained, argillaceous, some siltstone, very light brownish gray.
1120-1270	Siltstone, very light gray to medium light gray.
1270-1300	Shale, medium light gray to medium gray, soft, micaceous, silty, some siltstone as above.
1300-1420	Siltstone, very light gray to medium light gray, some shale, as above, some lignite.
1420-1510	Shale, medium light gray to very light brownish gray, soft, silty, bentonitic; some siltstone as above.
1510-1720	Shale, medium light gray to medium gray, micaceous, bentonitic, soft.
1720-1990	Shale, medium light gray, lumpy to platy, compact.
1990-2110	Shale, medium light gray, fissile, soft, bentonitic.
2110-2290	Shale, medium light gray, fissile to lumpy, soft, bentonitic.
2290-2590	Shale, medium light gray, lumpy to platy, compact.
2590-2950	Shale, medium light gray, fissile to lumpy, bentonitic.
2950-3010	Shale, medium light gray and light brown, (5YR6/4), fissile, soft, bentonitic.
3010-3490	Shale, medium light gray, fissile to platy, bentonitic.
3490-3580	Shale, medium dark gray, fissile, shale, as above.
3580-3700	Shale, medium dark gray, fissile.
3700-3760	Shale, medium dark gray, fissile, calcareous, contains "white specks", many Inoceramus fragments.
3760-4210	Shale, medium dark gray, fissile.
4210-4240	Shale, as above; traces of siltstone, very light gray.
4240-4320	Shale, as above, shale, medium gray, platy to fissile, traces of sandstone, very light gray, very fine grained, calcareous.
4320-4360	Sandstone, white to very light gray, very fine to fine grained; shale as above.

4360-4400 Shale, medium gray to medium dark gray, fissile to platy; traces of sandstone, as above.

4400-4440 Shale, light gray to light olive gray, lumpy, greasy, soft; some shale as above; some sandstone as above.

4440-4460 Sandstone, white to very light gray, very fine to fine grained, clean, quartzose; shale, light gray to light olive gray, lumpy, soft, greasy, contains some siderite nodules.

4460-4560 Sandstone, as above, some loose, fine to coarse, subangular quartz grains, much shale, as above.

4560-4620 Shale, light olive gray, pale red, light gray, lumpy, greasy, contains siderite nodules; traces of loose sand grains, as above.

4620-4680 Loose sand grains, fine to coarse, subangular to subrounded, quartz grains, some shale, as above.

4680-4760 Shale, light gray to light olive gray and pale red, lumpy, soft, greasy, contains a few siderite nodules.

4760-4780 Shale, as above, a little sandstone, colorless, very fine to fine grained subangular grains, clean, quartzose.

4780-4800 Sandstone, white to very light gray, very fine to fine grained, calcareous.

4800-4820 Shale, greenish gray, (5GY6/1), fissile, calcareous.

4820-4840 Shale, as above, some sandstone, white to very light gray, very fine to fine grained, calcareous; traces of limestone, white, fine grained, fragmental.

4840-4880 Shale, greenish gray (5GY6/1), fissile to platy, calcareous.

4880-4940 Shale, greenish gray (5GY6/1) platy to fissile, calcareous, with thin greenish gray sandstone stringers, sandstone is fine to very fine grained, calcareous.

4940-5000 Shale, greenish gray, platy to fissile, calcareous.

5020-5160 Shale, greenish gray (5GY6/1) fissile, calcareous.

5160-5220 Shale, as above, a little sandstone, light greenish gray, very fine grained, calcareous, silty.

5220-5260 Shale, greenish gray, silty, calcareous, some sandstone, light greenish gray, very fine grained, silty, calcareous.

5260-5280 Shale, greenish gray and light brown (5YR6/4) platy, compact, calcareous.

5280-5340 Shale, greenish gray and light brown to pale reddish brown (10R5/4) platy, compact, calcareous, a little sandstone, light greenish gray to light gray, very fine grained, silty, calcareous.

5340-5410 Limestone, very light gray, finely crystalline, earthy; shale as above.

5410-5430 Limestone, very light gray, sublithographic.

5430-5480 Limestone, very light gray to very light brownish gray, very finely crystalline to sublithographic.

5480-5490 Shale, pale reddish brown (10R5/4), platy to lumpy, slightly calcareous.

5490-5510 Dolomite, very light gray, very finely crystalline, some shale, as above.

5510-5520 Dolomite, as above.

5520-5560 Dolomite, as above with some interbedded anhydrite, colorless to white.

5560-5600 Anhydrite, colorless to white; some shale, pale reddish brown, platy, compact, slightly calcareous.

5600-5610 Shale, pale reddish brown, lumpy to platy, compact, a little anhydrite, colorless.

5610-5620 Shale, as above; a little siltstone, moderate reddish orange, slightly calcareous.

5620-5760 Siltstone, moderate reddish orange, slightly calcareous.

5760-5900 Siltstone, moderate reddish orange, slightly calcareous, contains some fine to medium, rounded, sand grains.

5900-5980 Siltstone, as above, grading into a silty sandstone, very fine to medium grained, slightly calcareous.

5980-6000 Sandstone, grayish pink, very fine to fine grained, silty, calcareous.

6000-6060 Sandstone, grayish pink, very fine to medium grained rounded to subrounded, poorly sorted, silty, calcareous.

6060-6080 Limestone, very light gray, fine to coarsely crystalline.

6060-6100 Siltstone, grayish pink, sandy, calcareous.

6100-6195 Siltstone, moderate reddish orange, calcareous.

6195-6210 Siltstone, as above, shale, moderate reddish orange, calcareous.

6210-6220 Shale, moderate reddish orange, lumpy to platy, compact, calcareous, some anhydrite, grayish pink to white.

6220-6225 Dolomite, moderate reddish orange, very finely crystalline, argillaceous; some anhydrite, as above.

6225-6230 Anhydrite, white.

6230-6255 Shale, medium gray, platy to fissile, very slightly calcareous, traces of white anhydrite.

6255-6280 Shale, pale reddish brown to moderate reddish orange, fissile to lumpy.

6280-6335 Anhydrite, white; some shale, as above.

6335-6345 Anhydrite, very light gray, dense, slightly calcareous.

6345-6350 Anhydrite, as above; some limestone, light brownish gray, very finely crystalline in part, traces of oolitic limestone.

6350-6385 Limestone, light brownish gray, very finely crystalline to oolitic, some vuggy porosity.

6385-6410 Anhydrite, colorless to white and grayish pink, dense, some limestone, light brownish gray, very fine to finely crystalline.

6410-6420 Limestone, very light brownish gray, oolitic.

6420-6435 Limestone, as above and limestone, very light brownish gray, finely crystalline.

6435-6440 Anhydrite, white, dense; some limestone, light brownish gray, oolitic and finely crystalline.

6440-6450 Limestone, very light brownish gray, oolitic.

6450-6490 Limestone, very light brownish gray, finely crystalline in part, oolitic in part.

6490-6495 Limestone, very light brownish gray, finely crystalline, argillaceous, limestone, as above.

6495-6510 Limestone, very light brownish gray, very finely crystalline, dense.

6510-6520 Limestone, as above, some anhydrite, white to very light gray.

6520-6535 Limestone, light brownish gray, finely crystalline, slightly argillaceous.

6535-6545 Limestone, very light brownish gray to brownish gray, oolitic in part, finely crystalline in part.

6545-6560 Limestone, very light brownish gray, fine grained, fragmental to finely crystalline.

6560-6570 Limestone, as above; a little dolomite, very light brownish gray, granular, fine grained.

6570-6590 Limestone, very light brownish gray to light brownish gray, finely crystalline in part, oolitic to fragmental in part.

6590-6605 Anhydrite, white to very light gray; some limestone as above.
 6605-6635 Limestone, very light brownish gray to light brownish gray, very finely crystalline in part, fine grained, fragmental to oolitic in part.
 6635-6665 Limestone, very light brownish gray to light brownish gray, fine grained, fragmental, slightly argillaceous, fossiliferous.
 6665-6690 Anhydrite, light gray, dense, some limestone, as above.
 6690-6705 Limestone, very light brownish gray to light brownish gray, fine grained, fragmental, fossiliferous.
 6705-6725 Anhydrite, very light gray to white; some limestone, as above.

Cores

6726-6727 Limestone, very light brownish gray, finely crystalline, anhydritic.
 6727-6728 Dolomite, very light brownish gray, very finely crystalline, anhydritic.
 6728-6729 Shale, medium gray, platy, compact, calcareous, pyritic.
 6729-6730 Shale, as above, limestone, very light brownish gray, fine grained, fragmental.
 6730-6732 Limestone, light brownish gray, fine grained, argillaceous.
 6732-6733 Limestone, very light brownish gray, fine grained, granular, fragmental, slight fluorescence, very slight cut with Ccl_4 .
 6733-6734 Limestone, very light brownish gray, dolomitic, microsucrosic, fair oil stain, fair cut with Ccl_4 , good intergranular porosity.
 6734-6741 Dolomite, very light brownish gray, microsucrosic, good intergranular porosity, spotty staining 6735-6736, earthy.
 6741-6742 Limestone, very light brownish gray, fine grained, fragmental, fair intergranular porosity.
 6742-6743 Limestone, very light brownish gray, finely crystalline, fragmental, tight.
 6743-6748 Dolomite, very light brownish gray, microsucrosic, limy, good pinpoint porosity.
 6748-6750 Limestone, very light brownish gray, fine grained, fragmental.
 6750-6751 Limestone, light gray, finely crystalline, argillaceous.
 6751-6752 Limestone, very light brownish gray, finely crystalline, fragmental.
 6752-6753 Limestone, very light brownish gray, fine grained, granular, dolomitic, fair pinpoint porosity, slight cut with Ccl_4 .
 6754-6758 Limestone, light gray, finely crystalline, fragmental, argillaceous, fossiliferous, dense.
 6758-6761 Limestone, very light brownish gray, oolitic to pisolitic, partially recrystallized to a finely crystalline, limestone, some colorless anhydrite filling the original porosity.
 6761-6780 Limestone, as above with slight vuggy porosity, fair oil stain and cut with Ccl_4 (6462-6469) some infilling with colorless anhydrite.
 6780-6785 Limestone, very light gray, oolitic to pisolitic with a fine grained matrix, good pinpoint porosity, some infilling with colorless anhydrite.
 6785-6787 Limestone, very light brownish gray, oolitic to pisolitic in part, mostly recrystallized to a finely crystalline, vuggy limestone with colorless anhydrite infilling of the vugs.
 6787-6788 Anhydrite, medium gray, very finely crystalline, calcareous with inclusions and thin bands of light brownish gray limestone.
 6788-6790 Anhydrite, very light gray to white, dense.

Samples

6800-6815 Limestone, very light brownish gray, fine grained, fragmental to finely crystalline.

6815-6825 Limestone, very light gray, finely crystalline, earthy.

6825-6858 Limestone, very light brownish gray, fine grained, fragmental in part, finely crystalline in part.

6858 Total depth.