

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 156

Summary of the Amerada Petroleum Corporation - Lacey-Norby No. 1
Well No. 1111 - Permit No. 1123

By Clarence Carlson

Amerada Petroleum Corporation - Lacey-Norby #1, McKenzie County, North Dakota, Location: C of Lot 10, Section 1, T. 152N., R. 95W. Elevation: 2148 K.B. Total Depth: 9118 feet.

The Amerada Petroleum Corporation - Lacey-Norby #1 was spudded April 2, 1956; drilled to a total depth of 9118 feet; completed as a producing well May 12, 1956.

Casing Record:

Set 9 5/8" surface casing at 618 feet with 450 sacks of cement.
Set 7 1/2" casing at 9116 feet with 1200 sacks of cement.

Completion Data:

Perforations: 9057 to 9088 with 4 shots per foot; acidized with 2000 gallons. Initial production 386 barrels of oil per day through a 14/64 inch choke, flowing pressure 800 lbs. per square inch. Gas-oil ratio 874 -1, 37.6 gravity, no water.

Tests:

DST. 1 - 7693-7766; open 4 1/2 hours, shut in 30 minutes, 1000 feet of water cushion; very strong blow at once decreasing to no blow in 1 1/2 hours; recovered 1000 feet of slightly muddy water cushion 6,450 feet of salt water. IHP 4275#; FHP 4250#; IFP 2835#; FFP 3750#; BHP 3790#.

DST. 2 - 8654-8716; open 5 hours, shut in 30 minutes; 2000 feet water cushion; air immediately weak to strong blow in 1 hour and 20 minutes, gas to the surface in 2 hours and 43 minutes, strong gas blow continuing for remainder of test. Recovered 360 feet of free oil, 450 feet of oil and gas cut water cushion (est. 75% oil) 550 feet of oil and gas cut water cushion (est. 50% oil), 1000 feet of oil and gas cut water cushion (est. 20% oil), 450 feet of fluffy oil and gas cut drilling mud (est. 30% oil), IFP 950#; FFP 1175#; IHP 4710#; FHP 4710#; BHP 4025#.

DST. 3 - 8733-8767; open 5 hours, shut in 30 minutes, 2000 feet water cushion, light blow immediately, increasing to strong blow in 15 minutes, gas to surface in 1 hour and 30 minutes, strong blow continued for the remainder of test. Recovered 800 feet of free oil, 3900 feet of highly gas and oil cut water cushion (est. 50% oil) 30 feet of highly gas and oil cut drilling mud (est. 50% oil). IHP 4825#; FHP 4825#; IFP 950#; FFP 1750#; BHP 4150#.

Logs: Microlaterolog-Gamma Ray
Laterolog-Gamma Ray

Cores: None

Formation tops were determined from samples and electric logs. Doubtful or obscure formations were not picked. Color names and identifying numbers are

taken from the 1948 Rock-Color Chart, distributed by the National Research Council.

FORMATION TOPS

Cretaceous System	
Pierre Formation	1387
Niobrara Formation	3545
Greenhorn Formation	3985
Dakota Group	4400
Muddy Sandstone	4495
Dakota Group Sandstone	4780
Jurassic System	5153 ?
Piper Limestone	5950
Triassic System	
Spearfish Formation	6210
Permian System	
Opeche Formation	6505 ?
Pennsylvanian System	
Minnelusa Formation	6980
Mississippian System	
Amsden Formation	7180
Big Snowy Group	7265
Kibbey Limestone	7790
Charles Formation	7930
Mission Canyon (base of last salt)	8550

3900-4020	Shale, medium dark gray, foliated.
4020-4140	Shale, medium dark gray, foliated, compact, calcareous, some white specks.
4140-4530	Shale medium dark gray, foliated, compact.
4530-4560	Shale, as above, a little sandstone very light gray, fine grained, calcareous.
4560-4680	Shale, medium gray and medium dark gray.
4680-4740	Shale, medium dark gray.
4740-4820	Shale, medium gray and medium dark gray, a little sandstone very light gray, fine grained, calcareous.
4820-4880	Sandstone very light gray, fine grained, shale, as above.
4880-4900	Shale, medium gray, some sandstone as above and siltstone, light gray.
4900-4920	Sandstone, very light gray, very fine to fine grained, some shale, very light gray, compact, waxy.
4920-4950	Shale, very light gray, waxy, compact and medium dark gray, platy, compact.
4950-5010	Shale, very light gray, and grayish orange pink 5YR7/2, compact, waxy, a little sandstone, very light gray, fine grained.
5010-5070	Sandstone, very light gray, fine grained, some shale, light gray to light olive gray, waxy, compact.
5070-5180	Shale, light gray and medium gray, waxy, compact.
5180-5240	Shale, light gray, light olive gray and moderate reddish brown, waxy, compact.
5240-5340	Shale, as above and medium dark gray.

5340-5370 Shale, light olive gray and moderate reddish brown, platy, compact.

5370-5440 Shale, light olive gray, platy, compact.

5440-5490 Shale, as above, some sandstone, very light gray, very fine to fine grained, calcareous.

5490-5580 Shale, light olive gray, platy, compact.

5580-5600 Shale, as above, a little sandstone, white to very light gray, very fine grained, calcareous.

5600-5640 Shale, light olive gray, platy, compact, slightly calcareous.

5640-5650 Shale, light olive gray to greenish gray, 5GY6/1, flaky to platy, slightly calcareous, traces of siltstone, light greenish gray, calcareous.

5650-5660 Shale, as above, some sandstone, very light gray, fine grained, calcareous, siltstone, as above.

5660-5700 Shale, as above and moderate reddish brown, siltstone, light greenish gray, sandy, slightly calcareous.

5700-5730 Shale, light olive gray and greenish gray, slightly calcareous, sandstone light greenish gray, fine grained, calcareous.

5730-5750 Shale, as above, sandstone, colorless to very light gray, fine grained, traces of limestone, very light gray, fine grained, fragmental.

5750-5760 Shale, light olive gray and greenish gray, flaky to platy, calcareous, traces of sandstone, very light gray to light greenish gray, very fine grained, calcareous.

5760-5840 Shale, as above.

5840-5860 Shale, as above, some sandstone, white to very light gray, fine grained.

5860-5880 Shale, greenish gray, flaky to platy, calcareous, sandstone, white, fine grained, calcareous.

5880-5910 Shale, as above, sandstone white, fine, grained, very calcareous.

5910-5930 Sandstone, white to very light gray, fine grained, very calcareous, shale, as above.

5930-5950 Shale, greenish gray, platy to lumpy, compact, calcareous, some sandstone, as above.

5950-5970 Sandstone, white, fine grained, calcareous, shale, as above.

5970-5980 Limestone, yellowish gray, very finely crystalline.

5980-5990 Limestone, yellowish gray and pinkish gray, very finely crystalline.

5990-6020 Limestone, as above, some sandstone, white, fine grained, calcareous.

6020-6050 Limestone, very light gray, finely crystalline.

6050-6140 Limestone, very light gray and pinkish gray, very finely crystalline, a little chert, pinkish gray.

6140-6160 Limestone, as above, some chert and a little sandstone, grayish orange pink, fine grained.

6160-6200 Shale, pale reddish brown, lumpy, some gypsum, colorless to white.

6200-6230 Shale, as above, some gypsum and siltstone, pale reddish brown.

6230-6240 Shale, pale reddish brown to moderate reddish orange, siltstone, moderate reddish orange, slightly calcareous.

6240-6320 Siltstone, moderate reddish orange, slightly calcareous, a little gypsum.

6320-6420 Siltstone, moderate reddish orange, slightly calcareous, sandy.

6420-6450 Siltstone, as above, some sandstone, moderate reddish orange, fine to medium, rounded grains, silty.

6450-6500 Salt, and siltstone, as above.

6500-6630 Shale, pale reddish brown, siltstone, moderate reddish orange, sandy.

6630-6680 Salt.

6680-6840 Siltstone, moderate reddish orange, calcareous, sandy.

6840-6990 Shale, pale reddish brown, calcareous, some siltstone, as above.

6990-7030 Sandstone, grayish pink to white, very fine grained, calcareous, much siltstone, as above.

7030-7050 Sandstone, as above, some dolomite, grayish pink, finely crystalline.

7050-7080 Sandstone, grayish pink, fine grained, calcareous.

7080-7140 Sandstone, as above, some dolomite, grayish pink finely crystalline.

7140-7160 Dolomite, grayish pink, finely crystalline, some sandstone, as above.

7160-7170 Sandstone, grayish pink, fine grained, calcareous, some dolomite, as above.

7170-7180 Sandstone, as above, some shale, moderate red, slightly calcareous.

7190-7200 Sandstone, grayish pink, fine grained, calcareous.

7200-7210 Sandstone, as above, dolomite, grayish pink, finely crystalline.

7210-7240 Dolomite, grayish pink to pale red, finely crystalline, some sandstone as above.

7240-7280 Dolomite, as above.

7280-7320 Shale, medium dark gray and moderate red, platy, compact, some dolomite, pinkish gray, finely crystalline.

7320-7340 Shale, moderate red, light olive gray 5Y5/2, platy, compact.

7340-7390 Shale, as above and medium dark gray, flaky to platy.

7390-7410 Shale, medium dark gray, platy, compact.

7410-7450 Shale, as above, a little shale, moderate red, platy, compact.

7450-7460 Shale, variegated, medium dark gray, moderate red, and light olive gray.

7460-7490 Shale, variegated, a little dolomite, pinkish gray, finely crystalline.

7490-7550 Shale, variegated, platy, compact.

7550-7580 Shale, as above, some dolomite, light gray, fine grained and grayish orange pink, fine grained.

7580-7600 Shale, variegated as above.

7600-7640 Shale, as above, a little limestone, light gray, fine grained.

7640-7660 Limestone, light gray to medium gray, very finely crystalline, and shale, variegated.

7660-7690 Shale, variegated.

7690-7710 Sandstone light gray and pinkish gray, fine grained, calcareous.

7710-7740 Sandstone, grayish orange pink 5YR7/2, fine to very fine grained, calcareous.

7740-7790 Sandstone, as above, some siltstone, pale red, calcareous.

7790-7830 Limestone, light gray, very finely crystalline, and light brownish gray, very finely crystalline.

7830-7870 Sandstone, grayish pink, very fine to fine grained, calcareous, some shale, variegated.

7870-7910 Sandstone, light gray to pinkish gray, very fine to fine grained, calcareous.

7910-7930 Sandstone, grayish orange pink 5YR7/2, very fine grained, calcareous.

7930-8000 Salt.
 8000-8040 Salt, some shale, light gray, compact and pale red, compact.
 8040-8100 Salt.
 8100-8180 Salt and siltstone, moderate reddish orange, shaly, calcareous.
 8180-8230 Poor samples, mostly cavings.
 8230-8290 Salt.
 8290-8320 Poor samples, mostly savings, should be salt and shale or siltstone.
 8320-8340 Poor samples, mostly shale, with a little white anhydrite and light brownish gray finely crystalline limestone.
 8340-8360 Salt and anhydrite, white to light gray, a little limestone, light brownish gray, very finely crystalline.
 8360-8380 Salt and shale, light gray, some limestone, light brownish gray, very finely crystalline, and anhydrite, white, dense.
 8380-8400 Limestone, light brownish gray, very finely crystalline and fine to medium grained, silty with good intergranular porosity.
 8400-8470 Limestone as above, some anhydrite, white.
 8470-8490 Anhydrite, white, some limestone, light brownish gray, very finely crystalline.
 8490-8510 Limestone, light yellowish gray, fine grained? sandy, fine grained, rounded quartz, some limestone, light brownish gray, finely crystalline.
 8510-8520 Limestone, light brownish gray, finely crystalline and some shale, medium dark gray.
 8520-8540 Anhydrite, white.
 8550-8590 Limestone, light brownish grey, fine grained, slightly argillaceous to finely crystalline.
 8590-8610 Anhydrite.
 8610-8615 Limestone, light brownish gray, finely crystalline.
 8615-8625 Limestone, light brownish gray, fine grained to finely crystalline.
 8625-8640 Limestone, as above, some white anhydrite.
 8640-8665 Limestone, light brownish gray, fine grained in part, finely crystalline in part.
 8665-8675 Limestone, as above, some anhydrite, light gray to white.
 8675-8685 Limestone, light brownish gray, very finely crystalline in part, fine grained in part.
 8685-8690 Limestone, light brownish gray, fine grained, slight fluorescence and cut with ccl_4 , some limestone, light brownish gray, finely crystalline.
 8690-8710 Limestone, light brownish gray, fine grained, oil stained.
 8710-8725 Limestone, light brownish gray, fine grained to finely crystalline, a few pieces are oil stained.
 8725-8735 Limestone, light brownish gray, finely crystalline to fine grained, a few pieces are oil stained.
 8735-8750 Limestone, light brownish gray, fine grained, slightly argillaceous, some oil staining.
 8750-8800 Limestone, light brownish gray, fine grained to finely crystalline.
 8800-8880 Limestone, light brownish gray, finely crystalline with a little secondary calcite, colorless, medium crystals. (8850-8880)
 8880-8900 Limestone, light brownish gray, finely crystalline, some oolitic, mostly recrystallized to dense limestone.

8900-8915 Limestone, light brownish gray, fine grained, micro-granular, oil stained, some limestone as above.

8915-8925 Limestone, light brownish gray, oolitic, mostly recrystallized to finely crystalline.

8925-8945 Limestone, as above and some fine grained, micro-granular, oil stained.

8945-8950 Limestone, light brownish gray, oolitic, mostly recrystallized to finely crystalline.

8950-9060 Limestone, light brownish gray, fine grained, to finely crystalline, some oil staining.

9060-9080 Limestone, light brownish gray, finely crystalline to fine grained, slightly argillaceous fragmental in part.

9080-9118 Limestone, light gray to light brownish gray, fine grained to finely crystalline, fragmental, containing some shell fragments.