

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 69

Summary of Sohio Petroleum Company and A. J. Artz #1

Bottineau County, North Dakota

Permit #354, Well #338

By LaVerne B. Nelson
May, 1954

Sohio Oil Company - A. J. Artz #1, Bottineau County, North Dakota. NE NN SW Section 14, T. 163N., R. 82W., (330 feet from north line and 990 feet from west line). Elevation 1521 Grd, 1530 K.B.

The Sohio - Artz #1 was spudded July 7, 1953, 10 3/4" surface casing was set at 280 feet and cemented with 150 sacks of cement. The well was drilled to a total depth of 4123 feet, plugged and abandoned August 7, 1953.

Cement plugs were set at the following depths: @ 3780-3720 w/25 sacks, @ 2390-2340 w/20 sacks of cement, @ 320-260 w/35 sacks of cement, top of surface casing w/5 sacks of cement and steel plate welded on top.

Core #1 3539-3545

Received 5 1/2 feet of sand with spotted oil stain.

DST #1 3534-45

Tool open 1 hour, received 90 feet of water cut mud with slight show of oil, 230 feet of brackish water. Flow pressure 300#, shut in pressure 1420#.

DST #2 3747-72

Tool open 4 hours, received 3472 feet mud out brackish water with slight oily taste. Flow pressure 300-1800#, 20 minutes, shut in pressure 2200#.

Formation tops were determined from samples and electric logs with sample depth corrected to electric log depth, not all lithologic tops were called in following list. Colors were determined from rock color chart.

FORMATION TOPS

Cretaceous System	
Niobrara Fm.	1602
Greenhorn Fm.	1874
Dakota	2369
Jurassic System	
Morrison Fm.	2770
Sundance Fm.	2833
Piper Fm.	3131
Triassic System	
Spearfish Fm.	3420

Mississippian System

Charles Fm.	3570
Mission Canyon Fm.	3750

0-150	Sandstone; fine to very coarse grained, subrounded to well rounded, frosted, pitted.
150-275	Shale; light gray, micro-micaceous, claystone.
275-370	Shale; greenish gray 5GY6/1, micro-micaceous, claystone, some medium grained, sub-angular sand.
370-400	Shale; greenish gray, compact, firm claystone, micro-micaceous, slightly pyritic.
400-450	Shale; medium gray, brittle, micro-micaceous.
450-500	Shale; medium-gray, micro-micaceous; lumpy.
500-510	Shale; medium light to greenish gray, firm to brittle.
510-570	Shale; medium light and medium dark gray, lumpy micaceous, slightly pyritic.
570-590	Shale; medium light gray, firm, slightly pyritic, micro-micaceous.
590-610	Shale; medium light to greenish gray, lumpy, micro-micaceous.
610-640	Shale; medium light gray, lumpy, micro-micaceous, some bluish white bentonite, slightly pyritic.
640-710	Shale; medium light gray, firm to brittle, micro-micaceous, slightly pyritic.
710-850	Shale; medium light gray, flaky to firm, micro-micaceous, slightly pyritic, trace, of brown siltstone.
860-1020	Shale; medium light gray, compact, firm to brittle, micro-micaceous.
1020-1130	Shale; light gray, compact, firm.
1130-1290	Shale; as above, bluish white micaceous bentonite, traces of crystalline calcite inclusions, slightly calcareous.
1290-1370	Shale; medium gray, lumpy, slightly calcareous, some bluish white bentonite, traces of tan siltstone.
1370-1410	Shale; dark gray, flaky, some bluish white bentonite, silty.
1410-1540	Shale; medium gray, bentonitic, lumpy, much white and bluish white bentonite, some brown siltstone.
1540-1630	Shale; dark gray, flaky, some bluish white micaceous bentonite.
1630-1710	Shale; medium dark gray, flaky, calcareous, some white bentonite, crystalline calcite inclusions, some crystals of pyrite.
1710-1730	Shale; medium gray, flaky, calcareous, some bluish white bentonite traces of pyrite and calcite crystal inclusions.
1730-1810	Shale; medium dark gray, flaky, calcareous, some bluish white bentonite, pyrite and siltstone.
1810-1880	Shale; dark gray, flaky, some white bentonite.
1880-1980	Shale; medium dark gray, calcareous, flaky, white specks, interbedded, thin beds of shaly, crystalline, dense limestone, traces of inoceramus fragments.
1980-2000	Shale; medium, gray, much bluish white, micaceous bentonite slightly calcareous.
2000-2030	Shale, medium dark gray, flaky, slightly calcareous traces of crystalline dolomite, some white bentonite and pyrite.
2030-2150	Shale; medium gray, platy, firm.

2150-2310 Shale; medium gray, flaky.
 2310-2352 Shale; medium gray lumpy, slightly calcareous, bentonitic.
 1 3/4 hour
 2352 Shale; same as above.
 2352-2380 Shale; medium gray, lumpy, bentonitic, slightly calcareous.

Note: poor samples, electric log shows sandstone 2380-2650.

2380-2420 Shale; as above, some fine, well rounded, frosted quartz grains.
 2420-2430 Shale; as above, medium grained, subangular to well rounded quartz cemented with pyrite.
 2430-2450 Shale; medium gray, laminated, calcareous.
 2450-2540 Shale; medium gray, flaky, some medium, well rounded, frosted quartz, siderite pellets.
 2540-2670 Shale; medium light gray, massive, bentonitic, some very fine grained, silica cemented sandstone.
 3/4 hour
 2670 Sandstone; medium to very coarse, subangular quartz, some quartz pebbles, shale as above.
 2670-2700 Shale; light gray, platy.
 2700-2760 Shale; as above, some very fine grained, sandstone cemented with calcite.
 2760-2770 Shale; greenish gray, friable, trace of fine crystalline, dense limestone, shale as above, some medium grained sandstone.
 2770-2800 Shale; medium light, medium gray, and greenish gray, platy, trace of brown siltstone.
 2800-2810 Shale; medium light and greenish gray, platy, trace of moderate orange pink, crystalline anhydrite.
 2810-2900 Shale; greenish gray and light olive gray, some brownish gray siltstone.
 2900-2980 Shale; light gray, platy.
 2980-3030 Shale; light gray, greenish gray and moderate reddish brown.
 3030-3040 Shale; as above, trace of lavender, splintery shale.
 3040-3090 Shale; light gray, greenish gray, and moderate reddish brown, splintery and flaky.
 3090-3100 Shale; as above, white to light gray, dense, sublithographic limestone.
 3100-3130 Shale; greenish gray, moderate reddish brown and light gray.
 3130-3170 Dolomite; grayish orange pink to very pale orange, dense, sublithographic, calcitic, anhydrite, filled veins, some fragmental and chalky limestone.
 3170-3270 Shale; greenish gray and moderate reddish brown, lavender calcareous shale, traces of white oolitic limestone.
 3270-3280 Limestone; white, chalky, some shale as above.
 3280-3390 Shale; greenish gray, moderate reddish brown, olive gray and medium dark gray, flaky and brittle, much fine grained, sucrosic, anhydrite.
 3390-3430 Shale; as above, traces of white chalky limestone, much anhydrite as above.
 3430-3455 Shale; moderate reddish orange to light brown, silty some very fine grained orange sandstone. Some greenish gray shale.
 3455 1 1/4 hours. Shale; light brown, silty, lumpy.
 3455-3484 Shale; light brown, silty and greenish gray, splintery.

3484 1 hour. Shale; light brown, very silty, some very fine grained sandstone.

3484-3510 As above.

3510 1 1/2 hours. Shale; as above,

3510-3539 Sandstone; very fine grained, silica cemented, well sorted, orange colored.

3539 1 1/2 hours. Sandstone; medium grained, well rounded, frosted, pitted, well sorted.

Core 3540-3545.

3540-3542 Sandstone; light brown, very fine grained, with medium grained, well rounded quartz grains suspended throughout, some anhydrite inclusions.

3542-3544 Sandstone; white medium grained, well rounded, frosted, pitted in very fine grained matrix.

3544-3545 Sandstone; as in 3540-42.

3545-3570 Sandstone; poor samples, mostly cavings from above, traces of light brown sandstone.

3570-3580 Anhydrite; pale red purple, lithographic, some fine grained, sucrosic anhydrite.

3580-3590 Limestone; yellowish gray, arenaceous, dense, some anhydrite.

3590 1 1/2 hours. Limestone; as above.

3590-3600 Limestone; as above.

3600-3610 Anhydrite; white and pale red purple variegated, dense massive.

3610-3710 Anhydrite; light bluish gray and white, dense, massive, some pale red purple massive anhydrite.

3710 1 1/2 hours. Dolomite; yellowish gray, medium grained, grainy, calcareous, a little fair to poor pinpoint porosity.

3710-3750 Dolomite; as above.

3750 1 1/2 hours. Dolomite; as above, some dense, sublithographic limestone.

3750-3760 Shale; dark reddish brown and greenish gray, splintery.

3760-3780 Dolomite; yellowish gray, sublithographic, dense a little fair tubular porosity.

3780-3790 Limestone; yellowish gray, medium grained, grainy to crystalline, some fragmental with fair tubular porosity.

3790-3810 Limestone; white to yellowish gray, medium grained sucrosic, traces of chalky, oolitic limestone, some good tubular to vuggy porosity.

3810-3820 Dolomite; yellowish gray, fine to medium grained, sucrosic, some good vuggy porosity.

3820-3840 Limestone; yellowish gray, fragmental crystalline to sublithographic.

3840-3860 Limestone; yellowish gray, sublithographic, dense.

3860-3880 Limestone; white to yellowish gray, argillaceous, chalky in part, some dense, fragmental.

3880-3910 Limestone; yellowish gray, fragmental to medium grained, sucrosic, some chalky, oolitic limestone with good porosity. Some dolomitic rhombs.

3911 2 1/2 hours. Limestone; yellowish gray, medium grained, sucrosic fair to good pinpoint porosity.

3911-3920 Limestone; yellowish gray, fine grained, much good vuggy porosity.

3920-3930 Limestone; yellowish gray, oolitic, dense, chalky in part.

3930 2 1/2 hours. Limestone; as above.

3930-3940	Limestone; very light gray, fine to medium grained, sucrosic.
3940-4010	Limestone; white, medium grained, grainy, chalky in part very little apparent porosity, possibly a little good to fair interstitial porosity.
4010-4040	Limestone; yellowish gray, oolitic, fragmental some chalky limestone.
4040-4110	Limestone; very light gray, medium grained, oolitic.
4110-4123	Limostone; yellowish gray, sublithographic, dense.
Total Depth	4123