

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 60

Summary of Los Nietos Union Oil Company of California - Wohletz #1  
Cavalier County, North Dakota  
Permit #48, Well #31

By LaVerne Nelson  
April, 1954

Los Nietos-Wohletz #1, Cavalier County, North Dakota, SW 1/4, Section 32, T. 160N., R. 60W. (1980 feet from south line and 660 feet from west line of section 32). Elevation: K.B. 1612 feet.

The Los Nietos-Wohletz #1 was spudded July 10, 1951. 10 3/4" casing set at 150' and cemented with 125 sacks of cement. The well was drilled to a total depth of 2765, plugged and abandoned August 8, 1951.

Cored Intervals

Core #1	1373-1383
#2	1430-1785
#3	1900-1991
#4	2218-2369
#5	2410-2606

Drill Stem Tests

DST #1: 1745-1785

Tool open 1 hour, shut in 15 minutes, recovered 1160' fluid; 250' mud and 910' salt water. Hydrostatic pressure 900 psi., shut in pressure 525 psi., flowing pressure 230-525 psi. Strong blow diminishing to moderately faint at end of test.

DST #2: 2325-2410

Tool open 2 hours, shut in 15 minutes, recovered 1200' fluid, 250' mud and 950' of salt water. Hydrostatic pressure 1200 psi., flowing pressure 0.600 psi., shut in pressure 800 psi. Good blow diminishing to faint at end of 1 hour.

The well was plugged with 15 sacks @ 2300', 15 sacks @ 1700', 15 sacks @ 1240', 15 sacks @ 1100', 15 sacks @ 135', 15 sacks @ surface.

Formation tops were determined from samples and electric log, not all lithologic tops were called in list. Colors were determined from rock color chart.

Formation Tops

Cretaceous System	
Niobrara	432
Greenhorn	822
Muddy	1035
Dakota	1165
Jurassic System	
Morrison	1265
Sundance	1286
Devonian System	
Top of Devonian	1365
Souris River	1583
Dawson Bay	1638
Ashern	1830
Silurian System	
Interlake	1862
Ordovician System	
Upper Stony Mtn.	2071
Lower Stony Mtn.	2123
Red River	2215

0-10	Shale; medium light gray N6 to light olive gray 51/6/1, massive, brittle shale, some pine sandstone, angular, very coarse quartz grains, and drift gravels.
10-150	Shale; medium light gray N6 to light bluish gray 5B7/1 firm; compact shale. (Claystone).
160-170	Shale; same slightly calcareous, abundant small mica flakes disseminated throughout.
170-200	Shale; medium light gray N6 to light bluish gray 5B7/1, firm, compact.
200-210	Shale; medium light gray N6 to light bluish gray 5B7/1, firm, brittle, much light olive gray 5Y4/1 calcareous siltstone.
210-400	Shale; medium light gray to light bluish gray, firm, compact to brittle.
400-450	Shale; light gray, to medium light gray, firm, spongy, bentonitic, some subangular, very coarse to coarse quartz grains.
450-520	Shale; medium light gray, to medium gray, firm compact to spongy, highly calcareous shale, first white specks, some white bentonite and pyrite, numerous mica flakes.
520-580	Shale; light gray, disaggregated, spongy calcareous shale, some bentonite.
580-600	Shale; medium light gray, flaky, spongy, calcareous, white specks.
600-620	Shale; same, some white bentonite.
620-650	Shale; same, no bentonite, calcareous.
650-700	Shale; medium gray, lumpy, calcareous, bentonitic shale, some white specks.
700-800	Shale; medium gray, flaky, non calcareous, very slightly bentonitic, some white bentonite.
800-820	Shale; same moderate brown siltstone.

820-860 Shale; medium gray to medium dark gray, flaky, spongy, calcareous shale, second white specks, abundant calcite prisms (Inoceramus?) 80%. A little pyrite and and bentonite.

860-870 Shale; same as above, some siltstone, 870-10 minutes.

870-910 Shale; medium gray, flaky, spongy, calcareous, bentonitic, white speckled shale, some grayish white bentonite and calcite prisms, a little pyrite and calcareous siltstone.

910-930 Shale; same, no pyrite.

930-940 Shale; same, some reddish brown siltstone, decrease in calcareous content.

940-1030 Shale; medium gray, slightly platy, friable, highly calcareous shale, white specks some calcareous siltstone.

1030-1070 Siltstone; light to medium light gray, highly calcareous siltstone, some light to light greenish gray, shale, a little bentonite.

1070-1090 Dolomite; limestone; clear white dolomite rhombs, silty fine grained crystalized loosely cemented limestone some medium gray, shale and siltstone.

1090-1120 Shale; medium gray to medium dark gray, platy to flaky, friable, highly calcareous, some bentonite, yellowish gray, calcareous siltstone.

1120-1140 Shale; sandstone, medium gray, platy, shale 50% coarse, poorly sorted, frosted, angular to subangular sand grains, a little pyrite.

1140-1160 Sandstone; coarse, poorly sorted, frosted, angular sand grains, some light gray shale and pyrite,

1160-1170 Sandstone; white, coarse, fairly well sorted, sand grains cemented with calcite, a little pyrite.

1170-1180 Shale; light to medium light gray, massive, spongy shale, much coarse to medium quartz grains calcareous.

1180-1190 Sandstone, subangular frosted, coarse, poorly sorted quartz grains, some medium light gray shale, calcareous.

1190-1200 Sandstone; poorly sorted, coarse, angular sand grains numerous siliceous, pitted pellets, light red to moderate red, a few clear quartz crystals.

1200-1230 Shale; moderate reddish orange shaly, siltstone.

1230-1240 Shale; some medium light gray.

1240-1300 Shale; greenish gray, calcareous, shale, very silty.

1300-1310 Siltstone; pale reddish brown fine grained, calcareous siltstone.

1310-1320 Sandstone; grayish yellow highly calcareous, fine grained sandstone some pale reddish brown calcareous siltstone.

1320-1355 Limestone; grayish yellow dolomitic limestone, vuggy porosity, a little medium gray shale.

1355-1360 Sandstone; moderate orange pink, very coarse to medium sized grains, some pyrite and massive subcrystalline dolomite.

1360-1373 Dolomite; grayish orange subcrystalline dolomite to moderate orange pink sugary to rhombic, vuggy dolomite.

1373-1425 Dolomite; moderate orange pink, to grayish orange pink, subcrystalline to sucrosic, fair to good porosity, a little pyrite.

1425-1436 Dolomite; very pale orange subcrystalline dolomite.

1436-1442 Dolomite; moderate pink, subcrystalline, massive.

1442-1448 Dolomite; very pale orange to pale yellowish brown sucrosic to subcrystalline dolomite, fractured and vuggy porosity, thin, interbedded, light greenish gray shale.

1448-1459 Limestone; grayish orange pink, fine grained sucrosic limestone interstitial porosity large cavities filled with grayish white limestone and also calcite crystals.

1459-1462 Limestone; grayish white subcrystalline limestone with pinkish purple mottling thin green shale band.

1462-1475 Limestone; very light gray, lithographic limestone purple stylolites cavities filled with calcite crystals.

1475-1478 Limestone; pale red, microsucrosic, sublithographic.

1478-1484 Limestone; yellowish gray, lithographic limestone, purple stylolites, cavities filled, calcite crystals.

1484-1487 Limestone; grayish yellow, sucrosic limestone.

1487-1499 Limestone; grayish orange sublithographic limestone, numerous cavities filled with white, dense, brachiopod fossils.

1499-1503 Limestone; white, very fine sucrosic limestone, vuggy porosity numerous brachiopod fossils.

1503-1506 Limestone; pinkish gray, very fine sucrosic limestone, numerous cavities filled with purplish and orange pink dolomite.

1506-1509 Limestone; very pale orange sucrosic limestone, pinpoint porosity.

1509-1518 Limestone; same, denser and finer grained (microsucrosic) poor porosity.

1518-1528 Limestone; grayish orange pink, sucrosic, fine grained limestone, large cavities filled with grayish brown, pinpoint porosity.

1528-1531 Limestone; white, oolitic appearing limestone, fine grained, sucrosic, pinpoint porosity to poor porosity.

1531-1536 Limestone; white, sublithographic, subcrystalline limestone, cavities filled with calcite crystals.

1536-1542 Dolomite; pale red purple, sublithographic limey dolomite purple mottling.

1542-1545 Dolomite; pale yellowish brown, very fine sucrosic dolomite vuggy porosity.

1545-1548 Dolomite; yellowish gray, subcrystalline to microsucrosic dolomite some dusky red purple mottling, pinpoint porosity.

1548-1553 Dolomite, same, numerous cavities filled with limestone.

1553-1568 Dolomite; pale pink, to pale red purple, fine grained sucrosic dolomite, some mottling of white dolomite.

1568-1598 Dolomite; yellowish gray, and pale red purple subcrystalline dolomite.

1598-1607 Shale; pale red to pale red purple, calcareous, brittle.

1607-1620 Dolomite; very pale orange, graining dolomite stylolites present.

1620-1626 Dolomite; light brown very fine grained limey dolomite pinpoint porosity.

1626-1629 Dolomite; moderate reddish orange, subcrystalline dolomite.

1629-1632 Limestone; light brown, grainy dolomitic limestone.

1632-1638 Dolomite; pale red purple, grainy to subcrystalline dolomite mottling of white limey dolomite.

1638-1644 Dolomite; very light gray, grainy to subcrystalline dolomite 3/4" band of dusky red iron stained dolomite.

1644-1654 Dolomite; very pale orange, graining, calcareous dolomite interbanding of white silty dolomite limestone.

1654-1657 Dolomite; mottling of white and pale pink, grainy, calcareous, dolomite pinpoint porosity.

1657-1660 Dolomite; grayish orange pink, slaty, shaly, calcareous dolomite.

1660-1674 Dolomite; pale red purple, grainy dolomite, white, chalky laminations of limey dolomite.

1674-1680 Dolomite; white; sucrosic limey dolomite, vuggy porosity.

1680-1682 Dolomite; pale purple, and white mottled sucrosic dolomite some hematite flakes disseminated throughout.

1682-1685 Dolomite; grayish white, sucrosic, some thin varves of hematite or limonite.

1685-1691 Dolomite; pale red purple, sucrosic dolomite.

1691-1708 Dolomite; yellowish gray, sucrosic, limey dolomite.

1708-1711 Dolomite pale red purple, microsucrosic dolomite, much secondary filling of yellowish gray; limey.

1711-1714 Dolomite; grayish purple, microsucrosic dolomite with a mottling of white sucrosic calcite and concretionary crystalline calcite.

1714-1720 Dolomite; buff microsucrosic, limey dolomite, secondary filling of grainy, pale red purple, limey dolomite probably brecciated resinous dusky red, veinlets in buff colored dolomite secondary calcite filling around buff colored fragments.

1720-1723 Dolomite; yellowish gray, and pale red purple mottling, sucrosic limey dolomite, bands of grayish red purple dolomite encircling buff colored fragments.

1723-1727 Dolomite; grayish orange pink, sucrosic dolomite.

1727-1730 Dolomite; white, sucrosic dolomite bands of grayish purple, sucrosic (Varves?)

1730-1733 Dolomite; yellowish gray, rhombic, dolomite good vugular, fractured and interstitial porosity.

1733-1736 Dolomite; light brownish gray, subcrystalline, good interstitial porosity.

1736-1739 Dolomite; light brownish gray, subcrystalline dolomite poor porosity.

1739-1742 Limestone; light brownish gray, sucrosic, good tubular porosity cavities partially filled with calcite crystals.

1742-1748 Dolomite; light brownish gray, subcrystalline limey dolomite large cavities, filled with dolomitic limestone, possibly brachiopod fossils.

1748-1750 Limestone; white, stromatoporoid coral structure, good interstitial, vuggy porosity.

1750-1764 Dolomite; light brownish gray, subcrystalline dolomite cavernous, filled with shaly limestone.

1764-1770 Limestone, white to pinkish gray, sucrosic, good interstitial porosity.

1770-1773 Limestone; white, sucrosic brachiopod fossils numerous some iron staining around outside of fossil.

1773-1776 Limestone; white, sucrosic, good intersitial porosity.

1776-1779 Dolomite; yellowish gray, subcrystalline, fair tubular porosity.

1779-1785 Dolomite; yellowish gray, microsucrosic limey, numerous brachiopod shells and pale red purple staining around cast, fair porosity.

1785-1790 Limestone; pinkish gray, sucrosic limestone, vuggy porosity some greenish gray.

1790-1810 Limestone; white to pinkish gray, sucrosic limestone, some dusky purple mottling brachiopod shells.

1810-1830 No samples.

1830-1835 Dolomite; grayish orange pink, microsucrosic, limey dolomite pinpoint to tubular porosity some grayish red purple, limey shale bands.

1835-1840 Limestone; pinkish gray, surrosic, dolomitic limestone a few fine grained clear quartz grains disseminated throughout, fair interstitial porosity.

1840-1850 Limestone; pale reddish brown, silty sucrosic.  
 1850-1870 Silt; moderate reddish orange, calcareous siltstone.  
 1870-1875 Siltstone; same, greater degree of induration.  
 1875-1890 Limestone; white, microsucrosic to subcrystalline, dolomitic limestone, some red iron staining.  
 1890-1895 Limestone; pale yellowish orange, microsucrosic, some dusky red gummy clay.  
 1895-1900 Limestone; very pale orange to yellowish gray, microsucrosic.  
 1900- Limestone; same as above.  
 1900-1906 Dolomite; buff, greenish gray, mottled, shaly dolomite, highly fractured with secondary, dusky red, calcareous silt, the buff colored fragments may be breccia.  
 1906-1915 Dolomite; pale red purple, microsucrosic, calcareous, fractured and secondary filling of white calcite.  
 1915-1928 Dolomite; white to yellowish gray, microsucrosic.  
 1928-1935 Dolomite; pale red purple, sublithographic, slightly silty and some red filled fractures.  
 1935-1939 Clay; dark reddish brown, calcareous, spongy clay.  
 1939-1950 Dolomite; yellowish gray, lithographic good vuggy porosity, vugs partially filled with brownish gray calcareous silt.  
 1950-1955 Limestone; white, oolitic limestone, vuggy porosity.  
 1955-1958 Dolomite; white, sucrosic, dense, calcareous dolomite.  
 1958-1964 Dolomite; same, fossiliferous and fractured.  
 1964-1967 Dolomite; yellowish gray, dense, sublithographic, breccia cemented with calcite.  
 1967-1970 Shale; grayish red purple, calcareous shale, mottling of pale pink calcite concretions.  
 1970-1972 Dolomite; white, dense lithographic dolomite.  
 1972-2000 Dolomite; white sucrosic, fine grained dolomite some interstitial porosity, fossiliferous brachiopods.  
 2000-2015 Dolomite; same becomes more dense and decrease in porosity, subcrystalline texture.  
 2015-2025 Dolomite; pinkish gray, subcrystalline some pale reddish brown silt.  
 2025-2035 Dolomite; pale red purple sublithographic.  
 2035-2055 Dolomite; white, sublithographic dolomite some greenish gray shale.  
 2055-2060 Dolomite; same no shale.  
 2060-2075 Dolomite; pinkish gray, subcrystalline irregular fragmental dolomite secondary dolomite filling fractures.  
 2075-2085 Sandstone; grayish orange to pale red purple dolomitic silt with medium sized, well rounded, frosted, poorly sorted quartz grains suspended throughout.  
 2085-2090 Sandstone; same some greenish gray, calcareous shale.  
 2090-2100 Dolomite; variegated yellowish gray and pale red purple, microsucrosic dolomite with numerous clear and frosted, well rounded, poorly sorted quartz grains.  
 2100-2105 Dolomite; very pale orange to pinkish gray, sucrosic dolomite a little vuggy porosity.  
 2105-2110 Dolomite; same more dense.  
 2110-2125 Dolomite; very pale orange dense, subcrystalline.  
 2125-2150 Limestone; pale red purple and white variegated, silty limestone, some very dusky red purple siltstone.  
 2150-2175 Limestone; grayish purple and very light gray variegated limestone, brecciated fragments, fossiliferous (brachiopods).

2175-2180 Limestone; same much pale reddish brown calcareous siltstone, fossiliferous.

2180-2210 Limestone; variegated medium bluish gray, yellowish gray and pale red purple brecciated limestone, fossiliferous.

2210-2218 Shale; light bluish gray to greenish gray, calcareous, spongy, clayey shale.

2218-2241 Limestone; yellowish gray, sublithographic, dolomitic limestone fossiliferous.

2241-2243 Limestone; yellowish gray, sucrosic limestone, good pinpoint porosity.

2243-2255 Limestone; same more dense.

2255-2260 Limestone; yellowish gray, sublithographic, brecciated, matrix of yellowish gray, sucrosic limestone.

2260-2263 Limestone; white limestone coral structures.

2263-2266 Limestone; yellowish gray, fossiliferous.

2266-2268 Limestone; light olive gray, microsucrosic, fragmental.

2268-2275 Limestone; yellowish gray, sublithographic fossiliferous.

2275-2278 Limestone; light brownish gray highly argillaceous limestone, some very dusky red purple secondary, silty filling of fractures.

2278-2334 Limestone; white, sublithographic, fossiliferous dolomitic limestone.

2334-2337 Limestone; yellowish gray, sucrosic limestone, some pinpoint porosity.

2337-2339 Limestone; variegated yellowish gray and moderate red, lithographic limestone conchoidal fracture, cherty appearance.

2339-2366 Limestone; yellowish gray, sucrosic, grainy limestone fossiliferous.

2366-2380 Limestone; yellowish gray, sublithographic limestone.

2380-2410 Limestone; white, sucrosic fossiliferous.

Cir. 2410 Same.

2410-2460 Limestone; white to yellowish gray sucrosic, large amount of silt, fossiliferous, some good pinpoint porosity and vuggy porosity.

2460-2516 Limestone; white to yellowish gray, highly fossiliferous, sucrosic, poor pinpoint porosity.

2516-2525 Limestone; mottled grayish orange pink and pale yellowish brown, grainy limestone, numerous fossil corals and brachiopods.

2525-2528 Limestone; same more sucrosic limestone.

2528-2547 Limestone; yellowish gray, sucrosic, medium sized grains, loosely cemented very fossiliferous.

2547-2553 Limestone; yellowish gray, microsucrosic, dolomitic limestone, not fossiliferous.

2553-2571 Limestone; white, sucrosic limestone some pinpoint porosity some silt.

2571-2575 Limestone; grayish yellow, dense highly fossiliferous, decrease in amount of silt.

2575-2577 Limestone; white oolitic.

2577-2588 Limestone; greenish gray, fragmental, fossiliferous.

2588-2603 Limestone; yellowish gray, sucrosic, some fossils.

2603-2685 Limestone; yellowish gray, sublithographic to sucrosic limestone, slightly fossiliferous.

2685-2715 Limestone; yellowish gray, microsucrosic, dolomitic limestone lense of greenish gray, shale some pyrite.

2715-2745 Limestone; yellowish gray 5Y7/2, microsucrosic, fossiliferous, some pyrite and silty limestone and oolites.

2745-2765 Limestone; same, some greenish gray 5GY6/1 shale, a little pyrite,  
very silty limestone.  
2765 Total Depth.