

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 111

Summary of the Shell Oil Company Eilert Spidahl #1
Benson County, North Dakota
Well #654 Permit #668

By Clarence G. Carlson

Shell Oil Co. - Eilert Spidahl #1, Benson County, North Dakota,
SE 1/4, NE 1/4 Section 21, T. 152N., R. 69W. (1980 feet from north line, 660
feet from east line) Elevation 1579 GL, 1589 KB.

The Shell Oil Co. - Spidahl #1 was spudded July 18, 1954 and 8 5/8 inch
casing was set at 252 feet with 150 sacks of cement. The well was completed as
a dry hole July 24, 1954 at a total depth of 2,970 feet.

Cement plugs of 10 sacks each were set at the following depths: 2940,
2400, 2300, 2090, 1826, and 252 feet and 5 sacks at the surface.

TESTS

DST #1 2392-2125 Weak blow for 30 minutes decreasing to very weak blow then
died after 1 1/2 hours. Shut in 1 hour. Recovered 80 feet of drilling
mud. FP 0#, SIP 570#, HP 12110#.

Formation tops determined from samples, electric and radioactivity logs,
corrected to electric log tops. Not all lithologic units were called in the
following list. Colors were determined from the rock color chart.

FORMATION TOPS

Cretaceous System

Pierre Formation	35
Niobrara Formation	885
Greenhorn Formation	1385
Dakota	1802

Jurassic System 2070

Piper Lime	2280
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Mississippian System

Mission Canyon Formation	2385
Lodgepole Formation	2420

Devonian System

Lyleton Formation	2888
Nisku Formation	2922

10-30	Sand and gravel, subangular to subrounded quartz and limestone grains.
30-60	Shale, medium light gray, earthy, massive, spongy, sand medium to coarse, subangular to rounded clear quartz grains, some rounded limestone grains.
60-80	Shale, medium light gray, earthy, massive, spongy, silty.
80-100	Shale, light brown, medium light gray, earthy to resinous, massive, spongy.
100-110	Shale, medium light gray, silty, earthy, massive, spongy.

110-170 Shale, medium light gray, resinous to earthy, foliated, spongy.
 170-190 Shale, medium light gray, silty, earthy, massive, spongy.
 190-210 Shale, medium gray, to medium light gray, resinous, flaky, spongy.
 210-250 Shale, medium dark gray, resinous, flaky, spongy, some light gray, micaceous bentonite from 30-40.
 270-510 Shale, medium gray, resinous, massive, compact.
 520-550 Shale, medium light gray, earthy, massive, compact.
 550-570 Shale, medium light and medium dark gray, earthy to resinous, massive, compact.
 570-790 Shale, medium light gray, earthy to resinous, massive, compact.
 790-840 Shale, medium light gray, as above, some white, micaceous bentonite.
 840-850 Shale, medium light gray, earthy, massive, compact.
 850-910 Shale, dark gray to grayish black, resinous, fissile, spongy some white, micaceous bentonite.
 910-1000 Shale, medium light gray, calcareous, white specks, earthy to resinous, foliated, compact, much dark gray shale, as above.
 1000-1030 Shale, medium light gray, earthy, foliated, compact.
 1030-1080 Shale, medium light gray, calcareous, white specks, earthy foliated, compact.
 1080-1090 Shale, as above, some dark gray, fissile, spongy.
 1090-1100 Shale, dark gray, fissile, spongy.
 1100-1150 Shale, medium light gray, earthy, massive, compact.
 1150-1180 Shale, as above and dark gray, fissile, spongy.
 1180-1200 Shale, dark gray, fissile, spongy, some medium light gray as above.
 1200-1270 Shale, medium light gray, earthy, massive, compact some dark gray shale.
 1270-1300 Shale, dark gray, fissile, spongy.
 1300-1400 Shale, dark gray, as above, medium gray, massive, compact.
 1400-1490 Shale, medium gray, calcareous, white specks, foliated compact, many inoceramus fragments.
 1490-1520 Shale, medium gray to medium dark gray, massive, compact, many inoceramus fragments.
 1520-1530 Shale, dark gray, fissile, spongy and compact, some white bentonite.
 1530-1620 Shale, dark gray, calcareous, fissile, spongy, many inoceramus fragments.
 1620-1710 Shale, dark gray, fissile, spongy.
 1710-1750 Shale, medium gray to medium dark gray, fissile, spongy.
 1750-1830 Shale, dark gray, as above, medium gray, massive compact.
 1830-1850 Sandstone, light brownish gray, very fine grained, calcareous.
 1850-1860 Sandstone, light gray, fine to medium grained, subangular, some pyrite cement.
 1860-1900 Sandstone, light gray, fine to coarse grained, subangular to subrounded, frosted grains, loosely cemented, pyrite cement.
 1900-1920 Sandstone, medium to coarse grained, subangular to subrounded, some frosted, some vitreous, clear loose quartz, some pyrite.
 1920-1960 Sandstone, fine to medium grained, subangular to subrounded, frosted and vitreous, quartz, pyrite cement, loosely cemented.
 1960-1970 Sandstone, medium grained, subangular to subrounded, vitreous loose quartz.
 1970-2020 Shale, dark gray, fissile, spongy, some sandstone as above.

2020-2050 Sandstone, fine to medium grained, subangular, pyrite cement some
hale, as above.

2050-2060 Sandstone, fine to medium grained, subangular to subrounded
vitreous, loose quartz grains, some pyrite cemented.

2060-2080 Sandstone, medium grained, subangular to subrounded, loose
vitreous quartz few gray chert grains.

2080-2090 Shale, medium light to medium dark gray, foliated, compact, much
sand in samples, as above.

2090-2110 Shale, medium light gray, foliated, compact.

2110-2140 Shale, as above, siltstone, light gray, calcareous.

2140-2160 Sandstone, light gray, very fine grained, calcareous, some shale,
as above.

2160-2170 Sandstone, light gray and very pale orange, very fine grained,
calcareous.

2170-2215 Shale, medium light gray, foliated, compact, some light gray, very
fine grained, calcareous sandstone.

2215-2230 Shale, grayish orange pink, calcareous, massive, compact, much
medium light to medium gray, foliated, compact shale.

2230-2260 Shale, light brown, slightly calcareous, foliated, compact.

2260-2285 Shale, light brown to pale reddish brown, calcareous, platy
compact.

2285-2295 Limestone, light gray, fine grained, granular.

2295-2300 Limestone, very light gray, sublithographic.

2300-2315 Limestone, as above. Sandstone, very light gray, fine to medium
grained, subrounded, calcareous and gypsum cement.

2315-2330 Limestone, yellowish gray, very fine grained.

2330-2340 Shale, pale reddish brown, calcareous, massive, compact, some
limestone as above.

2340-2360 Shale, pale red 10R6/2 pale reddish brown, calcareous, massive
compact, white, granular gypsum.

2360-2370 Shale, gypsum, as above, some limestone yellowish gray fine
grained.

2370-2375 Shale, pale red 10R6/2, silty, calcareous, much gypsum some pale
reddish brown, calcareous shale.

2375-2390 Shale, pale reddish brown, calcareous, gypsum.

2390-2395 Dolomite, yellowish gray, very fine grained, some anhydrite.

2395-2410 Limestone, light gray, fine grained, oolitic.

2410-2420 Dolomite, yellowish gray, fine grained.

2420-2430 Limestone, very light gray, fine grained, oolitic, some dolomite,
as above.

2430-2455 Limestone, light gray, fine grained, fossiliferous, fragmental
with some reddish mottling.

2455-2460 Limestone, pinkish gray, fine grained, granular, some fine
grained, fragmental as above.

2460-2475 Limestone, very light gray, fine grained, fragmental,
fossiliferous, some reddish mottling.

2475-2485 Limestone, yellowish gray, very fine grained, oolitic, fairly
tightly cemented.

2485-2490 Limestone, very light gray, fine grained, fragmental.

2490-2500 Limestone, pinkish gray, fine grained, oolitic and fragmental.

2500-2535 Limestone, very light gray, fine grained, fragmental,
fossiliferous some oolitic.

2535-2600 Limestone, very light gray, fine grained, fragmental,
fossiliferous, some reddish mottling.

2600-2670 Limestone, very light gray, fine grained, fragmental, fossil, some chert.

2670-2690 Limestone, very light gray, very finely crystalline.

2690-2710 Limestone, light gray, fine grained, fragmental, fossiliferous.

2710-2715 Limestone, yellowish gray, fine grained.

2715-2725 Limestone, very light gray to pinkish gray, fine grained, oolitic in part, fragmental in part.

2725-2730 Limestone, pinkish gray, fine grained, fragmental.

2730-2755 Limestone, yellowish gray to very light gray, fine grained, fragment, much white chert.

2755-2770 Limestone, light gray to pinkish gray, fine grained, fragmental, fossiliferous some chert.

2770-2780 Limestone, yellowish gray, fine grained to finely crystalline, much white and pink chert.

2780-2790 Limestone, grayish pink, fine grained, granular, argillaceous much chert, pink and white.

2790-2815 Limestone, light gray, fine grained, much chert.

2815-2830 Limestone, yellowish gray, pinkish gray, fine grained, granular much chert.

2830-2855 Limestone, yellowish to pinkish gray, fine grained, fragmental some chert.

2855-2865 Shale, medium gray, fissile, compact.

2865-2875 Limestone, yellowish gray, fine grained, fragmental, some medium to coarse crystals, few pieces of chert.

2875-2890 Limestone, pale red 5R6/2 fine grained, fragmental, much white chert.

2890-2920 Shale, medium dark gray, calcareous, fissile, spongy, some pale reddish brown calcareous, massive, compact.

2920-2930 Dolomite, very pale orange, fine to medium grained, granular.

2930-2940 Dolomite, very pale orange to moderate orange pink, fine to medium grained, grainy.

2940-2950 Dolomite, grayish orange pink, fine to medium grained microsucrosic.

2950-2970 Dolomite, grayish orange pink, very finely crystalline, some fine to medium grained, microsucrosic.