

# NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 256

Summary of the Skelly Oil Company - Otto Tank No. 1  
McKenzie County, North Dakota  
Well No. 1995 - Permit No. 2007

by Clarence G. Carlson  
January, 1962

The Skelly Oil Company - Otto Tank No. 1 well is located in C NE, NW of Section 34 T. 152N. R. 96W., McKenzie County, North Dakota. Elevations: G.L. 2313; K.B., 2328.

The Skelly Oil Company - Otto Tank No. 1 well was spudded August 27, 1958, drilled to a total depth of 9,305 feet and completed October 4, 1958 as the discovery well of the Clear Creek field.

## Logs Run:

Laterolog-Gamma Ray  
Microlaterolog

## Core Record:

9182-9230

## TESTS:

DST 1; 9,010 to 9,062; Tool open 4 hours, shut in 30 minutes. Good blow throughout test. Recovered 910 feet of water cushion, 15 feet of clean oil and 187 feet of slightly oil and gas cut salt water. Pressures: HP 5050, IFP 420, FFP 535, SIP 3040, FHP 5050.

DST 2; 9,167 to 9,197; Tool open 9 1/2 hours, shut in 35 minutes. Good blow immediately, gas to surface in 37 minutes; unloaded water cushion, oil to surface in 5 hours. Flowed for 4 1/2 hours on 1/2 inch choke and recovered 48 barrels of oil, 40.3° API gravity. Gas tested 110 MCF/D. Pulled 4 1/2" drill pipe and recovered 90 feet of salt water above tool. Pressures: IFP 500, FFP 950, SIP 3150, FHP 4950.

DST 3; 9,197 to 9,216; Tool open 2 hours, shut in 30 minutes. Weak blow throughout test. Recovered 1,100 feet of water cushion and 31 feet of heavy gas cut muddy salt water. Pressures: IHP 5165 FHP 5080; IFP 465, FFP 480, SIP 1620.

DST 4; 9,214 to 9,245; Misrun.

DST 5; 9,214 to 9,245; Misrun.

DST 6; 9,197 to 9,245; Tool open 3 1/2 hours, shut in 30 minutes. Weak blow of air throughout test. Recovered 1096 feet of water cushion, 2 feet of water cut oil and 210 feet of highly gas cut muddy salt water. Pressures: IHP 5120, IFP 505, FFP 590, SIP 3570, FHP 5120.

DST 7; 9,234 to 9,305; Tool open 3 1/2 hours, shut in 30 minutes. Weak blow of air throughout test. Recovered 1,090 feet of water cushion and 220 feet of muddy salt water. No shows. Pressures: IHP 5295, IFP 475, FFP 575, SIP 3720, FHP 5295.

#### Casing and Completion:

10 3/4 inch surface casing set at 629 feet with 500 sacks of cement.

5 1/2 inch casing set at 9290 feet with 1200 sacks of cement.

Perforated the interval from 9176 to 9184 feet with 4 shots per foot.

Acidized with 500 gallons of mud acid. Flowed 156 barrels of oil per day, 6% water through 2 3/8" tubing with 10/64" choke: Estimated GOR 450-1.

#### Subsequent Potential tests:

September 12, 1959	171 BO/D
October 25, 1959	206 BO/D
November 17, 1959	170 BO/D
December 22, 1959	184 BO/D
January 13, 1960	213 BO/D
February 20, 1960	211 BO/D
March 10, 1960	162 BO/D

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

#### FORMATION TOPS

Cretaceous System	
Pierre Formation	1398
Greenhorn Formation	4084
Mowry Formation	4496
Fall River Formation	4897
Jurassic System	5258?
Rierdon Formation	5765
Piper Limestone	6037
Triassic System	
Spearfish Formation	6303
Permian System	
Minnekahta Formation	6734
Opeche Formation	6764
Pennsylvanian System	
Minnelusa Formation	7208
Mississippian System	
Kibbey Limestone	8053
Madison Group	8195
Poplar Interval	8195
Ratcliffe Interval	8818
Frobisher-Alida Interval	9086

2000-2150	Shale, medium gray to medium dark gray, fissile.
2150-2360	Shale, medium gray, soft, fissile.
2360-2390	Shale, medium dark gray, soft, fissile.
2390-2450	Shale, medium gray, soft, fissile.
2450-2930	Shale, medium gray to medium dark gray, soft, fissile.
2930-2960	Shale, medium dark gray, soft, fissile.
2960-3110	Shale, medium gray, soft, fissile.
3110-3200	Shale, medium dark gray, fissile to platy.

3200-3230 Shale, medium gray, fissile to platy.  
 3230-3770 Shale, medium dark gray to medium gray, fissile to platy.  
 3770-3890 Shale, medium dark gray, platy to fissile, calcareous, contains "white specks".  
 3890-4100 Shale, medium gray to medium dark gray, platy, to fissile.  
 4100-4120 Shale, medium dark gray, fissile to platy.  
 4120-4210 Shale, medium dark gray to medium gray, fissile to platy.  
 4210-4470 Shale, medium dark gray, platy to fissile, calcareous, contains "white specks", many *Inoceramus* fragments.  
 4470-4660 Shale, medium dark gray, fissile to platy.  
 4660-4710 Shale, as above; sandstone, very light gray, very fine to fine grained, calcareous, argillaceous.  
 4710-4830 Shale, medium dark gray, soft, fissile.  
 4830-4890 Shale, as above; some sandstone, very light gray, very fine to fine grained.  
 4890-4920 Shale, medium dark gray, fissile.  
 4920-4950 Sandstone, very light gray, very fine grained, silty, calcareous, some shale, medium gray, much shale, medium dark gray.  
 4950-4960 Sandstone, as above; a little sandstone, colorless to white, fine grained, subangular, clean, quartzose.  
 4960-4990 Sandstone, very light gray to very light brownish gray, fine grained, subangular, well sorted, clean, quartzose; some shale, medium gray, fissile, micaceous, silty.  
 4990-5010 Shale, medium gray, soft, fissile, greasy.  
 5010-5060 Sandstone, very light gray, fine grained, subangular, clean, quartzose; some shale, medium gray, fissile to platy, soft; some siderite nodules.  
 5060-5120 Shale, medium gray, soft, fissile; a little sandstone, as above; some siderite nodules.  
 5120-5200 Sandstone, white to very light gray, fine grained to very fine grained, clean, quartzose; some shale, light gray and grayish red, soft, fissile, greasy.  
 5200-5410 Shale, light gray, light olive gray and grayish red, soft, fissile, greasy, some siderite nodules.  
 5410-5440 Shale, as above; some siltstone, medium light gray to light olive gray.  
 5440-5500 Shale, as above.  
 5500-5510 Sandstone, very light gray to white, very fine grained, silty, calcareous; some shale, greenish gray, platy, calcareous.  
 5510-5540 Shale, greenish gray, fissile to platy, calcareous; a little sandstone, as above.  
 5540-5580 Sandstone, white to very light gray, very fine grained, calcareous, silty, some shale, as above.  
 5580-5610 Shale, greenish gray to light olive gray, fissile to platy, soft, calcareous; a little sandstone as above.  
 5610-5630 Sandstone, white to very light gray, very fine to fine grained, clean, quartzose, slightly calcareous; some shale, as above.  
 5630-5750 Shale, greenish gray, fissile, calcareous.  
 5750-5810 Shale, greenish gray, platy to fissile, calcareous.  
 5810-5840 Shale, greenish gray to light olive gray, fissile to platy, calcareous.  
 5840-5940 Shale, light olive gray to greenish gray, platy, compact, very calcareous.  
 5940-5950 Shale, grayish red, lumpy, calcareous; some shale, as above.

5950-5990 Shale, as above; some sandstone, very light gray, very fine grained, silty, calcareous.

5990-6000 Shale, grayish red and greenish gray, platy to lumpy, calcareous; some sandstone, very light greenish, very fine grained, calcareous.

6000-6030 Shale, as above; traces of limestone, very light gray, finely crystalline, fragmental; some sandstone, very light gray, very fine grained, calcareous.

6030-6040 Limestone, very light gray, fine to medium crystalline, fragmental; some shale, light olive gray to greenish gray, platy, calcareous.

6040-6050 Shale, light olive gray to greenish gray, fissile to platy, calcareous.

6050-6060 Limestone, light gray to very light brownish gray, very finely crystalline, earthy, slightly argillaceous.

6060-6070 Limestone, as above; some sandstone, white, very fine to fine grained, clean, quartzose.

6070-6110 Limestone, very light gray to light yellowish gray, finely crystalline.

6110-6160 Limestone, light yellowish gray, fine grained, granular, pinpoint porosity, a little chert, white to very light gray.

6160-6220 Limestone, light yellowish gray, finely crystalline.

6220-6240 Limestone, as above; some shale, pale reddish brown, lumpy, slightly calcareous.

6240-6250 Shale, pale reddish brown, lumpy to platy, slightly calcareous.

6250-6320 Shale, as above; some anhydrite, colorless to white.

6320-6350 Siltstone, moderate reddish orange, slightly calcareous; some anhydrite, colorless to white; some shale, as above.

6350-6450 Siltstone, moderate reddish orange, slightly calcareous; a little anhydrite, colorless to white.

6450-6530 Siltstone, as above with some fine to medium rounded sand grains.

6530-6580 Samples, as above; logs indicate salt from 6530 to 6580.

6580-6650 Some siltstone, as above; mostly shale cavings.

6650-6760 Siltstone, moderate reddish orange, slightly calcareous, sandy; some white anhydrite.

6760-6780 Limestone, moderate pink, fine grained, granular; some siltstone, as above.

6780-6820 Some siltstone, moderate reddish orange, slightly calcareous; much shale cavings.

6820-6880 Logs indicate that the section is mostly salt from 6820 to 6880; samples contain mostly shale cavings.

6880-6940 Siltstone, moderate reddish orange, slightly calcareous; mostly shale cavings.

6940-6960 Siltstone, as above; some colorless salt.

6960-7010 Shale, moderate reddish orange to pale reddish brown, lumpy, slightly calcareous.

7010-7070 Shale, pale reddish brown, lumpy, calcareous.

7070-7140 Shale, as above; some siltstone, moderate reddish orange, slightly calcareous.

7140-7210 Siltstone, moderate reddish orange, slightly calcareous, many medium, rounded, loose quartz grains.

7210-7370 Sandstone, pinkish gray, fine grained, very slightly calcareous; some dolomite, pinkish gray, fine grained; some chert, white to very light gray.

7370-7380 Dolomite, very light gray to pinkish gray, very finely crystalline.

7380-7470 Dolomite, as above; some shale, moderate red, platy, very slightly calcareous.

7470-7490 Shale, variegated, mostly moderate red, some light gray, pinkish gray and purplish gray, platy to fissile.

7490-7560 Shale, variegated as above and dusky yellow, platy to fissile.

7560-7570 Shale, as above; numerous nodules of hematitic red carbonate.

7570-7610 Shale, variegated, mostly moderate red, platy to fissile, some nodules, as above; a little sandstone, pinkish gray, very fine to fine grained, calcareous.

7610-7620 Shale, variegated, platy to fissile, increasing amounts of dark gray, shale.

7620-7635 Shale, dark gray, fissile to platy; some variegated shale, as above.

7635-7650 Shale, dark gray, fissile to platy; traces of coal.

7650-7665 Shale, dark gray, fissile to platy; traces of sandstone, light brownish gray, very fine to fine grained, argillaceous.

7665-7680 Shale, dark gray, fissile to platy.

7680-7690 Shale, as above; a little sandstone, very light brownish gray, very fine grained, argillaceous, very slightly calcareous.

7690-7700 Dolomite, very light gray, finely crystalline; shale, variegated; sandstone, pinkish gray, fine grained, calcareous.

7700-7710 Sandstone, pinkish gray, fine grained, calcareous, argillaceous; some shale, variegated, mostly moderate red, platy.

7710-7720 Shale, variegated, mostly dark gray, platy; a little sandstone, as above.

7720-7730 Dolomite, light yellowish gray, very finely crystalline, limy.

7730-7745 Dolomite, light brownish gray, very finely crystalline, limy.

7745-7750 Shale, light greenish gray, fissile to platy, calcareous, some dolomite, as above.

7750-7755 Shale as above; some limestone, medium light gray, finely crystalline, fragmental, argillaceous.

7755-7760 Shale, light greenish gray to greenish gray, platy to fissile, calcareous; some limestone, light yellowish gray, finely crystalline, earthy.

7760-7770 Limestone, as above; some shale, as above.

7770-7785 Limestone, light yellowish gray, finely crystalline, fragmental in part, earthy in part.

7785-7810 Limestone, as above; shale, variegated, platy.

7810-7860 Limestone, medium light gray, finely crystalline, very argillaceous; some shale, variegated.

7860-7900 Shale, variegated, mostly greenish gray to olive gray, splintery; some limestone as above.

7900-7905 Shale, as above; a little siltstone, grayish orange pink, calcareous.

7905-7915 Siltstone, very light gray to grayish orange pink, calcareous, shale, variegated, platy.

7915-7925 Sandstone, very light gray to pinkish gray, very fine to fine grained, calcareous, some siltstone, as above grading into a very fine grained sandstone.

7925-7930 Sandstone, very light gray to pinkish gray, very fine to fine grained, silty, calcareous.

7930-7960 Sandstone, pale red to pinkish gray, very fine to fine and medium grained, calcareous.

7960-8110 Traces of limestone, light gray, very finely crystalline, sandstone, as above, much shale cavings.

8110-8150 Limestone, very light brownish gray, very finely crystalline; much shale, variegated, platy.

8150-8220 Some siltstone, moderate reddish orange, calcareous, much shale cavings.

8220-8420 Salt, colorless.

8420-8510 Shale, medium gray to medium light gray, fissile to platy, slightly calcareous; traces of limestone, medium gray, finely crystalline, fragmental, argillaceous.

8510-8520 Shale, as above; some salt.

8520-8610 Salt, colorless.

8610-8620 Limestone, light brownish gray, finely crystalline to fine grained, granular, fragmental; some salt.

8620-8630 Limestone, light brownish gray, oolitic to pisolitic in part, fine grained, fragmental in part.

8630-8690 Limestone, light brownish gray, very finely crystalline, dense in part, a little oolitic and some fragmental limestone.

8690-8720 Salt.

8720-8730 Salt; some limestone, very light brownish gray, very finely crystalline to fine grained, granular.

8730-8750 Anhydrite, white to very light gray; some limestone, light brownish gray, oolitic in part, finely crystalline in part.

8750-8780 Limestone, very light brownish gray, very finely crystalline in part, fine grained, granular, fragmental in part, some anhydrite, white.

8780-8800 Limestone, as above.

8800-8820 Anhydrite, white to very light gray; some limestone, very light brownish gray, fine grained, fragmental to finely crystalline.

8820-8835 Limestone, very light brownish gray, very finely crystalline to fine grained, granular and fragmental.

8835-8840 Limestone, very light brownish gray, fine grained, granular with fine to medium, rounded; some limestone, as above.

8840-8850 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental.

8850-8890 Limestone, as above; traces of anhydrite, white.

8890-8900 Salt; limestone, as above.

8900-8930 Salt.

8930-8950 Anhydrite, very light gray; some limestone, very light brownish gray, fine grained.

8950-8955 Limestone, light brownish gray, finely crystalline to fine grained, fragmental; some anhydrite, light gray.

8955-8975 Anhydrite, very light gray to white; some limestone, as above.

8975-9035 Limestone, very light brownish gray, fine grained, fragmental.

9035-9080 Limestone, as above; some limestone, light brownish gray, very finely crystalline.

9080-9115 Limestone, medium gray to light brownish gray, finely crystalline, fragmental, fossiliferous, argillaceous.

9115-9135 Limestone, very light brownish gray, finely crystalline, fragmental, fossiliferous.

9135-9180 Limestone, very light brownish gray, finely crystalline, fragmental, fossiliferous, cherty.

Cores

9182-9183	Dolomite, light brownish gray, microsucrosic, slight oil stain, no cut with CCl <sub>4</sub> .
9183-9189	Limestone, light brownish gray, fine to medium, crystalline, fragmental, fossiliferous, dolomitic, slightly argillaceous oil stain.
9189-9197	Limestone, light brownish gray, fine to medium crystalline, fragmental, fossiliferous, slightly argillaceous.
9197-9199	Limestone, very light brownish gray, fine to coarsely crystalline, fragmental, fossiliferous.
9199-9211	Limestone, light brownish gray, fine to medium crystalline, fragmental, fossiliferous, slightly argillaceous.
9211-9214	Dolomite, light brownish gray, finely crystalline, slightly argillaceous, fracture filled with colorless anhydrite.
9214-9215	Limestone, medium gray to light brownish gray, fine to medium crystalline, fragmental, fossiliferous, stylolitic.
9215-9230	Limestone, light brownish gray, fine to medium crystalline, fragmental, fossiliferous, slightly argillaceous.