

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 215

Summary of the Northwest Oil Drilling Company - Durick Brothers No. 1 Well
Burke County, North Dakota
Well No. 1153 - Permit No. 1165

by David S. Johnson
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The Northwest Oil Drilling Company - Durick Brothers #1 is located in SW SE of section 31, T. 164N., R. 93W. Elevation 1900 G.L., 1911 K.B.

The Northwest Oil Drilling Company - Durick Brothers #1 was spudded May 26, 1956 and 10 3/4" casing was set at 410 feet with 250 sacks of cement. The well was drilled to a total depth of 6698 feet, plugged and abandoned as a dry hole on June 21, 1956.

Logs:

Schlumberger gamma ray-lateral log - 411'-6696'.

Cores:

6035'- 6085' recovered 50 feet.

Tests:

DST #1 6025'- 6035'; Tool open 2 hours, shut to 30 minutes. Fair blow for 1 hour, 25 minutes and then died. Recovered 36 feet slightly oil and gas cut drilling mud, 150 feet black sulfur water. Initial flow pressure 15#, final flow pressure 175#, shut in pressure 325#, initial hydrostatic pressure 3430#, final hydrostatic pressure 3525#.

DST #2 6138'-6163'; Tool open 2 hours, shut in 30 minutes. Good to excellent blow immediately and continuing throughout test. Recovered 1567 feet of fluid, 150 feet slightly oil and gas cut mud, 90 feet heavily oil and gas out mud, estimated 10% oil, 90 feet heavily oil and gas cut watery mud, estimated 10% oil, 1237 feet of gas cut salt water. Initial flow pressure 120#, final flow pressure 725#, shut in pressure 2680#, initial hydrostatic pressure 3590#, final hydrostatic pressure 3350#.

Plugging Record:

20 sacks of cement at 6130'
20 sacks of cement at 5560'
29 sacks of cement at 5170'
20 sacks of cement at 3670'
20 sacks of cement at surface casing.

Formation tops were determined from samples and the gamma ray-lateral log. Doubtful or obscure formation tops were not picked. Colors and identifying numbers are taken from the Rock Color Chart distributed by the Geological Society of America.

FORMATION TOPS

Cretaceous System	
Pierre formation	1137
Niobrara formation	2991
Greenhorn formation	3306
Mowry formation	3579
Newcastle formation	3692
Fall River formation	3917
Jurassic System	4791
Piper formation	
"Piper Lime"	4965
Triassic System	
Spearfish formation	5195
Mississippian System	
Charles formation	5552
Midale marker	6027
0-40	Glacial sand and gravels.
40-60	Lignite.
60-80	Limestone, medium gray, fine grained, tight argillaceous.
80-100	Cement casing.
100-120	Cement, same limestone as above.
120-140	Cement, same lignite.
140-180	Cement.
180-240	Lignite.
240-260	Shale, light gray, compact, some lignite.
260-280	Lignite.
280-300	Lignite, limestone medium gray, dense, argillaceous fossil fragments.
300-340	Lignite.
348	Circulate - Sand grains and lignite.
360-380	Lignite.
380-400	Lignite, shale, medium light gray, lumpy slightly calcareous.
410	Circulate.
410-560	Lignite, shale, very light gray, lumpy, slightly calcareous.
560-620	Siltstone, very light gray, argillaceous, some sand grains, soft, slightly calcareous.
620-710	Lignite.
710-950	Shale, medium light gray, compact, lumpy.
950-1100	Shale, as above. Same shale, dark gray, platy. Some of the medium light gray shale is sandy.
1100-1190	Shale, medium gray-light gray, lumpy. Some lignitic material.
1190-1340	Shale, medium light gray, lumpy.
1340-1560	Shale, medium gray-medium light gray, lumpy compact. Some bentonite.
1560-1760	Shale, as above.
1760-1880	Shale as above, some bentonite.
1880-1910	Sample missing.
1910-2030	Shale, medium gray lumpy. Small amounts of bentonite and pyrite.
2030-2060	Shale medium gray, hard compact. Some shale, as above.
2060-2210	Shale, medium gray, lumpy, some bentonite.
2210-2240	Shale, as above, some limestone, brownish gray, dense.

2240-2620 Shale, medium light gray, lumpy compact. Some bentonite.
 2620-2650 Shale, as above. Minor amounts of shale, pale reddish brown, (10R5/4), compact.
 2650-2770 Shale, medium gray-medium light gray, lumpy-compact. Small amounts of light brownish gray shale, limy.
 2770-3010 Shale, medium gray-medium light gray, lumpy-compact. Bentonite.
 3010-3040 Shale, medium dark gray, platy, shale as above.
 3040-3100 Shale, medium dark gray, fissile, "white specks," shale, as above.
 3100-3250 Shale, dark gray, fissile, shale as above.
 3250-3280 Shale, dark gray, compact, fissile.
 3280-3370 Shale, as above, some shale, medium light gray, compact.
 3370-3460 Shale, dark gray, compact, "white specks", Inoceramus prisms.
 3460-3520 Shale, grayish black-dark gray, compact. Some "white specks" and Inoceramus prisms.
 3520-3560 Shale, dark gray, compact, some shale, medium gray, compact. Inoceramus fragments. A few "white specks."
 3560-3620 Shale, dark gray, fissile. Inoceramus prisms. Some pyrite.
 3620-3690 Shale, medium dark gray, fissile. Some Inoceramus prisms.
 3690-3700 Shale, as above. Some shale, medium light gray, lumpy, spongy.
 3700-3705 Circulate 3/4 hour.
 3710-3840 Shale, medium light gray, spongy. Some medium dark gray shale and very light gray sandstone, very fine-grained.
 3840-3920 Shale, medium dark gray-medium gray fissile.
 3920-3970 Shale, as above, some sandstone white-light gray, fine grained.
 3970-4010 Shale, as above. Sandstone, very light gray-clear, fine medium grained, poorly sorted.
 4010-4140 Shale, medium gray-light gray, compact-lumpy.
 4140-4230 Shale, as above. Some sandstone, very light gray, fine grained.
 4230-4240 Shale, medium gray-light gray, compact-lumpy, some siderite "pellets" and reddish brown siltstone.
 4240-4250 Sample, as above. A few coarse grained sand grains.
 4250-4280 Shale, medium light gray, lumpy sandy. Shale, as above.
 4280-4320 Shale, medium dark gray-light gray, lumpy-compact. Sand grains, clear, coarse subangular.
 4320-4350 Shale, medium gray-medium dark gray, compact splintery.
 4350-4370 Shale, medium light gray. Shale, as above. Some sand grains, medium grained, clear, subangular.
 4370-4390 Shale, as above.
 4390-4450 Shale, medium gray-medium light gray, compact-lumpy. Sandstone, white, very fine grained, calcareous.
 4450-4490 Shale, dark gray-light gray fossils.
 4490-4510 Shale, as above. Some sandstone. Very light gray very fine grained, calcareous.
 4510-4550 Shale, variegated, splintery. Predominantly grays and greenish grays. Some sandstone, as above.
 4550-4600 Shale, dark gray-medium light gray, greenish gray (5GR6/1), splintery. Some sandstone as above.
 4600-4730 Shale, as above. Some is silty, slightly calcareous.
 4730-4750 Shale, dark gray-greenish gray, splintery-compact. Some sandstone, very light gray, very fine-grained, calcareous. Some loose sand grains.
 4750-4790 Sample, as above, some shale, dark reddish brown, (10R3/4) compact.

4790-4800 Shale, pale reddish brown (10R5/4) compact. Shale, medium gray-greenish gray (5GY6/1), compact-splintery.

4800-4810 Shale, variegated, sandstone, very light gray, very fine grained, limestone, light brownish gray-white, crystalline.

4810-4840 Shale and sandstone, as above.

4840-4890 Shale, as above. Limestone, brownish gray, coarse grained, partly recrystallized.

4890-4900 Shale, variegated, splintery compact. Limestone, brownish-gray very light brown, recrystallized.

4900-4930 Sandstone, pale reddish brown (10R5/4), very fine grained shale, as above.

4930-4950 Shale, variegated, splintery compact.

4950-4960 Limestone, yellowish gray (5Y8/1) very fine-grained, dense. Shale, as above.

4960-4970 Shale, medium gray light gray. Some shale, moderate reddish brown, splintery. Sandstone, clear-white, medium grained.

4970-4980 Limestone, brownish-gray light brownish gray, fine-coarse grained.

4980-5000 Shale, variegated, splintery, some limestone, as above.

5000-5010 Dolomite, pinkish gray (5YR8/1) sublithographic.

5010-5030 Dolomite, as above, shale, medium gray-greenish gray, splintery.

5030-5040 Shale, variegated, splintery-compact.

5040-5050 Shale, as above. Some limestone, light brownish gray, very fine grained dense.

5050-5070 Shale, variegated, splintery. Increasing amount of grayish red shale.

5070-5080 Shale, medium gray-greenish gray, splintery compact.

5080-5090 Shale, as above. Limestone, very light brown, very fine grained, dense.

5090-5100 Shale, medium gray, compact.

5100-5150 Shale, as above. Anhydritic dolomite, white-brownish gray.

5150-5190 Anhydrite, white light brownish gray, shale, as above.

5190-5250 Siltstone, moderate reddish orange (10R6/6), sandy, some shale as above.

5250-5270 Sandstone, moderate reddish orange, fine grained silty. Some loose sand grains, frosted, subrounded.

5270-5290 Sandstone, as above. Shale, greenish gray (5GY6/1) waxy.

5290-5300 Sandstone, as above.

5300-5350 Shale, medium light gray-greenish gray, splintery, waxy. Small amounts of sandstone, as above.

5350-5370 Shale, as above. Some shale, grayish red (10R4/2) splintery,

5370-5380 Shale, as above. Sandstone, moderate reddish orange. Fine grained.

5380-5390 Shale, medium dark gray, medium gray, splintery-compact.

5390-5410 Shale, as above. Some sandstone, as above.

5410-5500 Sandstone, moderate reddish orange (10R6/6) fine grained. Shale medium gray, compact. Some loose frosted sand grains, subrounded.

5500-5530 Sample as above. Predominantly sandstone, some gypsum.

5530-5560 Sandstone, moderate reddish orange, (10R6/6) fine grained. Some loose frosted sand grains. Small amounts of gypsum.

5560-5570 Sandstone, as above. Shale, greenish gray (5GY6/1) waxy.

5570-5580 Siltstone, moderate reddish orange. Shale, as above. Some gypsum.

5580-5590 Dolomite, light red (5R6/6) medium grained. Some shale, as above.

5590-5600 Dolomite, moderate reddish orange, fine grained, silty.

5600-5620 Anhydrite, white dense, dolomite as above. Some shale, medium gray-greenish gray, compact.

5621 Circulate 1 hour.

5620-5630 Limestone, pinkish gray (5YR8/1) fine-medium grained, dense, anhydritic.

5630-5635 Limestone, light brownish gray, fine grained dense. Limestone, as above.

5635-5645 Anhydrite, white, crystalline, dense. Limestone, as above.

5645-5655 Limestone, pinkish gray (5R8/2) - moderate pink (5R7/4) fine medium grained, dense, anhydritic.

5655-5660 Anhydrite, white, dense, limestone, as above.

5660-5665 Dolomite, moderate pink (5R7/4) very fine grained, dense, dull anhydrite, as above.

5665-5670 Dolomite, moderate red (5R5/4) very fine grained, dense, anhydrite.

5670-5675 Dolomite, grayish pink (5R8/2) very fine grained, dense.

5679 Circulate, 1 hour.

5675-5690 Limestone, very light gray, fine-medium grained dense.

5691 Circulate, 1 hour.

5690-5695 Limestone, yellowish gray (5Y8/1) very fine grained, dense.

5695-5705 Limestone, yellowish gray, oolitic-pelletoidal.

5705-5720 Limestone, as above. Some dolomite, moderate pink (5R7/4) fine grained.

5720-5740 Anhydrite, very light brown-white, massive.

5740-5745 Limestone, pale red (10R6/2) fine grained, dolomitic. Some anhydrite, as above.

5745-5755 Shale, greenish gray, splintery. Limestone and anhydrite as above.

5755-5760 Shale, medium gray, platy.

5760-5765 Shale, as above. Some shale, dark gray splintery.

5765-5785 Shale, as above. Anhydrite, whites massive.

5785-5790 Anhydrite, light gray, massive. Some shale.

5791 Circulate 1 hour.

5790-5795 Limestone, brownish gray, very, fine grained, dense, anhydrite, as above.

5795-5800 Limestone, brownish gray, fine-medium grained, dense.

5800-5805 Limestone, as above. Anhydrite, white massive.

5805-5815 Limestone, brownish gray, dense, fine grained.

5815-5820 Shale, greenish gray, compact. Some limestone, as above.

5820-5825 Limestone, brownish gray (5YR4/1) very fine grained, dense.

5825-5840 Shale greenish gray (5GY6/1) compact, some limestone, as above.

5840-5845 Shale, variegated, some anhydrite, white, massive.

5845-5855 Anhydrite, white, massive. Shale, as above.

5855-5865 Limestone, dark gray, light brown, medium grained. Partly sucrosic.

5866-5880 Limestone, as above. Some anhydrite, white and shale, dark gray-greenish gray.

5880-6890 Limestone, medium light gray, very fine grained, dense dolomitic.

5890-5900 Limestone, as above. Anhydrite, light gray-white, dense.

5900-5910 Anhydrite, very light brown, massive.

5910-5915 Dolomite, brownish gray-light brownish gray, medium grained, some anhydrite, white.

5915-5920 Anhydrite, white, shale, greenish gray-dark reddish brown (10R3/4) compact.

5920-5930 Anhydrite, light gray, massive. Shale as above.

5930-5945 Limestone, light brownish gray, medium grained. Some anhydrite, as above.

5947 Circulate, 3/4 hour.
5947-5955 Limestone, as above, some limestone, pinkish gray (5YR8/1) very fine grained.
5955 Circulate 3/4 hour.
5955-5960 Limestone, as above. Much caving material.
5960-5965 Anhydrite, medium light gray dense,
5965-5980 Anhydrite, as above. Some anhydrite, light brownish gray, dense.
5980 Circulate 1 hour.
5980-5985 Limestone, light brownish gray, medium grained, crystalline.
5985-5990 Limestone, as above. Anhydrite, medium light gray, dense.
5991 Circulate 1 hour.
5990-5995 Limestone, anhydrite, as above, Caving material.
5995-6020 Anhydrite, medium light gray. Very light brown, dense.
6020-6035 Anhydrite, as above. Shale, greenish gray (5GY6/1) splintery.
6035 Circulate 1 1/2 hours.

Core Description

6035-6037 Limestone, light brownish gray, fine grained, poor porosity.
6037-6040 Limestone, brownish gray, medium grained, oolitic in part, dense.
6040-6042 Limestone, light brownish gray, microsugrosic, poor porosity.
6042-6045 Dolomite, light brownish gray, microsugrosic. Some limy.
6045-6048 Limestone, light brownish gray, fine grained, tight.
6048-6049 Limestone, light brownish gray, partly recrystallized, fine medium grained, tight.
6049-6054 Limestone, light brownish gray, microsugrosic, tight. Very small stylolites.
6054-6055 Limestone, brownish gray, recrystallized.
6055-6056 Limestone, medium gray, recrystallized, fossiliferous, pyrite.
6056-6059 Limestone, light brownish gray, fine grained.
6059-6060 Limestone, light brownish gray, microsugrosic. Some porosity.
6060-6061 Limestone, as above. Some black stylolites.
6061-6062 Limestone, as above.
6062-6063 Limestone, as above, pyrite.
6063-6064 Limestone, as above. Partly recrystallized.
6064-6066 Limestone, brownish gray, fine grained, dense, tight.
6066-6067 Limestone, as above. Some limestone, light gray, very fine grained.
6067-6068 Limestone, brownish gray (5YR4/1) fine grained, dense.
6068-6070 Limestone, yellowish gray (5Y8/1) microsugrosic, fossiliferous.
6070-6071 Limestone, light brownish gray, fragmental, oolitic, in part.
6071-6072 Limestone, brownish gray, medium grained, tight.
6072-6075 Anhydrite, white-light brownish gray, massive. Some interbedded limestone.
6075-6076 Limestone, brownish gray (5YR4/1) medium grained. Some anhydrite, as above.
6076-6079 Anhydrite, white-light brown, massive, small amounts of limestone, as above.
6079-6080 Anhydrite, white, massive.
6080-6084 Anhydrite, white, dense, some limestone, brownish gray, medium grained.
6085 Anhydrite, white, massive.
End of Core Chips

6085-6095 Caving material.

6095-6115 Anhydrite, very light gray, some limestone, brownish gray, medium grained.

6117 Circulate 1 1/4 hours.

6117-6125 Limestone, light brownish gray, fine-medium grained. Some micro-sucrosic, Some anhydrite, as above.

6125-6160 Limestone, as above. Mostly fine grained, dense.

6163 Circulate, 2 hours.

6163-6170 Caving material.

6170-6195 Limestone, as above.

6195 Circulate 3/4 hour.

6195-6255 Limestone, light brownish gray, oolitic in part, small amount of vuggy porosity.

6255-6275 Limestone, light brownish gray, brownish gray. Fine-medium grained.

6275 Circulate 1 hour.

6275-6295 Limestone, as above.

6295-6300 Limestone, as above. Some limestone dark gray, argillaceous. Some secondary calcite.

6300-6315 Samples missing.

6315 Circulate 1 hour.

6315-6350 Samples missing.

6350-6385 Limestone, light brownish gray, brownish gray, fine-medium grained, Some limestone, white, sublithographic.

6385-6390 Shale, medium light gray, splintery. Limestone as above.

6390-6410 Limestone, light brownish gray-brownish gray, fine-medium grained. Some limestone, white, sublithographic.

6410-6445 Shale, variegated, splintery. Mostly medium dark gray. Some limestone, as above. Increasing limestone content with increased depth.

6445-6495 Limestone, light brownish gray-white, fine-grained sub-lithographic.

6495-6505 Limestone, light brownish gray-brownish gray, fine-medium grained.

6505-6515 Limestone, light brownish gray, fine grained. Shale medium gray-greenish gray (5GY6/1), splintery.

6515-6555 Limestone, brownish gray-light brownish gray, fine grained dense.

6555-6585 Limestone, brownish black (5YR2/1) fine grained. Some limestone, as above.

6585-6590 Shale, medium gray-greenish gray (5GY6/1) splintery. Some limestone, as above.

6590-6610 Limestone, brownish black (5YR2/1) fine grained, argillaceous fossiliferous.

6610-6630 Limestone, very light brown, fine grained. Some limestone, as above.

6630-6645 Limestone, brownish gray, light brownish gray-light brownish gray fine grained, dense.

6645-6685 Limestone, very light brown, fine-medium grained. Some limestone, as above.

6685-6698 Limestone, as above. Some shale, greenish gray, splintery.

6698 Total Depth.