GECO

A/S NORSKE SHELL

ROUTINE CORE ANALYSIS

WELL: 31/2-8

GECO

A/S NORSKE SHELL

ROUTINE CORE ANALYSIS

WELL: 31/2-8

GECO

# . C O M M E N T S

## Routine Core Analysis

Technics: Frozen cores technics.

Preparation: The analyses were performed on frozen cores. The plug samples were cut by using liquid nitrogen as a cooling agent. Using a special plug holder the plugs were mounted in frozen condition.
In this holder a cold cleaning takes place, using methanol by toluene and finally methanol.

Measurements: The plugs were measured for brine porosity and air permeability. In addition grain density were measured.
Your have to notice that on some plugs the helium porosity were measured. This was done because the plugs were both consolidated and very tight.

# LABORATORY

**FINAL REPORT**

GECO
GEOPHYSICAL COMPANY OF NORWAY A/S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 1

Field State

| DEPTH | HORIZONTAL PERMEABILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1842.05 | 2135 | 2075 | | | | 33,1 | | | 2,67 | |
| 35 | 2589 | 2509 | | | | 32,4 | | | 2,67 | |
| 70 | 2878 | 2798 | 2122 | 2062 | | 31,9 | | | 2,66 | |
| 1843.00 | 2548 | 2468 | | | | 31,5 | | | 2,66 | |
| 35 | npp | | | | | | | | | |
| 70 | 2479 | 2399 | 275 | 255 | | 31,6 | | | 2,65 | |
| 1844.00 | 2204 | 2144 | | | | 32,5 | | | 2,66 | |
| 35 | 2406 | 2326 | | | | 31,6 | | | 2,66 | |
| 70 | 2205 | 2145 | 950 | 952 | | 32,2 | | | 2,67 | |
| 1845.00 | 1208 | 1158 | | | | 30,6 | | | 2,66 | |
| 35 | 1969 | 1909 | | | | 28,8 | | | 2,64 | |
| 70 | 1241 | 1191 | 992 | 952 | | 29,8 | | | 2,65 | |
| 1846.00 | 1495 | 1445 | | | | 31,7 | | | 2,63 | |
| 35 | 1142 | 1092 | | | | 30,9 | | | 2,64 | |
| 70 | 1870 | 1810 | 1023 | 973 | | 31,5 | | | 2,64 | |
| 1847.00 | 914 | 874 | | | | 31,6 | | | 2,63 | |
| 35 | 894 | 854 | | | | 30,3 | | | 2,65 | |
| 70 | 903 | 863 | 1045 | 995 | | 30,0 | | | 2,64 | |
| 1848.00 | 1216 | 1166 | | | | 31,6 | | | 2,65 | |
| 35 | 909 | 869 | | | | 28,3 | | | 2,64 | |

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# LABORATORY

## FINAL REPORT

GECO
GEOPHYSICAL COMPANY OF NORWAY A/S

Company ....NORSKE SHELL.....Date ....November 1982.....

Well .....31/2-8.....Core ....1 cont.....

Field .....State .....

| DEPTH | HORIZONTAL PERMEBILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1848.70 | 1429 | 1379 | 1044 | 994 | | 32,5 | | | 2,63 | |
| 1849.00 | 1092 | 1042 | | | | 30,9 | | | 2,63 | |
| 35 | 974 | 934 | | | | 31,6 | | | 2,63 | |
| 70 | 1115 | 1065 | 1729 | 1669 | | 31,6 | | | 2,64 | |
| 1850.00 | 2451 | 2371 | | | | 33,0 | | | 2,63 | |
| 35 | 2814 | 2734 | | | | 32,1 | | | 2,64 | |
| 70 | 963 | 923 | 2950 | 2870 | | 27,8 | | | 2,65 | |
| 1851.00 | 2349 | 2269 | | | | 32,7 | | | 2,63 | |
| 35 | 1954 | 1894 | | | | 31,5 | | | 2,64 | |
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# LABORATORY

**FINAL REPORT**

GECO
GEOPHYSICAL COMPANY OF NORWAY A/S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 2

Field State

| DEPTH | HORIZONTAL PERMEABILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1852.50-56 | 3293 | 3213 | 2404 | 2324 | | 30,7 | | | 2,63 | |
| 82-90 | 1514 | 1464 | | | | 32,2 | | | 2,63 | |
| 1853.16-25 | 321 | 291 | | | | 30,4 | | | 2,64 | |
| 56-68 | 451 | 421 | 366 | 336 | | 31,5 | | | 2,64 | |
| 90-98 | 237 | 217 | | | | 28,9 | | | 2,65 | |
| 1854.45-54 | 147 | 132 | 293 | 273 | | 22,8 | | | 2,69 | |
| 80-88 | 86 | 75 | | | | 19,8 | | | 2,70 | |
| 1855.12-19 | 19 | 15 | | | | 17,1 | | | 2,70 | |
| 42-50 | 146 | 131 | 28 | 23 | | 19,8 | | | 2,71 | |
| 70-79 | 0.69 | 0.45 | | | | 12,3 | | | 2,73 | |
| 1856.04-15 | 0.158 | 0.09 | | | 7,6 | | | | 2,67 | Conv. Plug |
| 42-50 | 0.204 | 0.12 | 0.080 | 0.05 | 9,0 | | | | 2,67 | " " |
| 74-83 | 50 | 43 | | | | 26,7 | | | 2,64 | |
| 1857.08-14 | 127 | 113 | | | | 29,3 | | | 2,64 | |
| 45-50 | 116 | 103 | 121 | 108 | | 30,1 | | | 2,64 | |
| 71-80 | 105 | 93 | | | | 29,0 | | | 2,60 | |
| 1858.04-10 | 88 | 77 | | | | 29,4 | | | 2,65 | |
| 34-40 | npp | | | | | | | | | |
| 63-71 | 24 | 20 | 47 | 40 | | 26,6 | | | 2,64 | |
| 94-00 | 21 | 17 | | | | 25,1 | | | 2,66 | |

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**FINAL REPORT**

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GEOPHYSICAL COMPANY OF NORWAY A-S

Company NORSKE SHELL ..... Date November 1982

Well 31/2-8 ..... Core 2 cont.

Field ..... State .....

| DEPTH | HORIZONTAL PERMEABILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1859.40-48 | 15 | 12 | | | | 25.0 | | | 2.67 | |
| 71-78 | 1.4 | 1.0 | 0.61 | 0.40 | | 19.1 | | | 2.66 | |
| 1860.01-06 | 2.2 | 1.6 | | | | 20.8 | | | 2.67 | |
| 33-41 | 2.2 | 1.6 | | | | 24.3 | | | 2.66 | |
| 63-70 | 2.0 | 1.4 | 0.70 | 0.46 | | 21.1 | | | 2.68 | |
| 1861.00-08 | 0.66 | 0.44 | | | 17.2 | | | | 2.70 | |
| 34-43 | 0.98 | 0.67 | | | 17.9 | | | | 2.70 | Conv. plug |
| 64-70 | 0.53 | 0.34 | 0.183 | 0.11 | 16.4 | | | | 2.65 | " " |
| 1862.00-07 | 0.40 | 0.26 | | | 15.0 | | | | 2.64 | " " |
| 34-41 | 0.57 | 0.37 | | | 16.8 | | | | 2.65 | " " |
| 63-70 | 0.66 | 0.44 | 0.204 | 0.12 | 16.8 | | | | 2.72 | " " |
| 1863.00 | 0.82 | 0.55 | | | 16.4 | | | | 2.67 | " " |
| 34 | 0.39 | 0.25 | | | 16.2 | | | | 2.76 | " " |
| 64-71 | 0.64 | 0.42 | 0.35 | 0.22 | 16.5 | | | | 2.64 | " " |
| 1864.00 | 0.43 | 0.28 | | | 15.3 | | | | 2.63 | " " |
| 35 | 0.33 | 0.21 | | | 14.9 | | | | 2.59 | " " |
| 63-70 | 0.66 | 0.44 | 0.25 | 0.16 | 16.7 | | | | 2.69 | " " |
| 1865.00 | 1.9 | 1.3 | | | 16.6 | | | | 2.64 | " " |
| 34 | 1.08 | 0.73 | | | 16.0 | | | | 2.70 | " " |
| 63-70 | 0.40 | 0.26 | 0.192 | 0.12 | 14.8 | | | | 2.62 | " " |

# LABORATORY

**FINAL REPORT**

GECO
GEOPHYSICAL COMPANY OF NORWAY A-S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 2 cont.

Field State

| DEPTH | HORIZONTAL PERMEBILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1866.00 | 0.96 | 0.65 | | | 14.9 | | | | 2.65 | Conv. Plug |
| 33 | 0.93 | 0.63 | | | 17.1 | | | | 2.64 | " " |
| 63-70 | 0.41 | 0.26 | 0.118 | 0.07 | 14.7 | | | | 2.62 | " " |
| 1867.00 | 0.55 | 0.36 | | | 15.2 | | | | 2.62 | " " |
| 33 | 2.1 | 1.5 | | | 19.2 | | | | 2.65 | " " |
| 63-70 | 6.1 | 4.6 | 7.5 | 5.7 | 20.9 | | | | 2.72 | " " |
| 1868.00 | 0.46 | 0.29 | | | 14.5 | | | | 2.75 | " " |
| 33 | 4.6 | 3.4 | | | 22.5 | | | | 2.75 | " " |
| 63-71 | 4.1 | 3.0 | 1.07 | 0.73 | 20.8 | | | | 2.68 | " " |
| 1869.00 | 2.1 | 1.5 | | | 19.1 | | | | 2.65 | " " |
| 33 | 3.4 | 2.5 | | | 19.6 | | | | 2.68 | " " |
| 58-65 | 1.12 | 0.8 | 0.49 | 0.32 | 17.8 | | | | 2.66 | " " |
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# LABORATORY

## FINAL REPORT

GECO
GEOPHYSICAL COMPANY OF NORWAY A-S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 3

Field State

| DEPTH | HORIZONTAL PERMEBILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1870.00 | 2.3 | 1.6 | 0.88 | 0.59 | 19.4 | | | | 2.67 | Conv. plug |
| 35 | 2.2 | 1.6 | | | 19.4 | | | | 2.69 | " " |
| 70 | 2.7 | 1.9 | | | 20.1 | | | | 2.70 | " " |
| 1871.00 | 1.5 | 1.0 | 0.66 | 0.44 | 18.8 | | | | 2.69 | " " |
| 35 | 2.2 | 1.6 | | | 19.7 | | | | 2.71 | " " |
| 70 | 0.79 | 0.53 | | | 17.3 | | | | 2.78 | " " |
| 1872.00 | 0.85 | 0.57 | 0.49 | 0.32 | 17.4 | | | | 2.67 | " " |
| 35 | 0.38 | 0.24 | | | 15.5 | | | | 2.65 | " " |
| 70 | 0.53 | 0.34 | | | 15.8 | | | | 2.65 | " " |
| 1873.00 | 0.45 | 0.29 | 0.167 | 0.10 | 16.2 | | | | 2.65 | " " |
| 35 | 0.44 | 0.28 | | | 14.5 | | | | 2.62 | " " |
| 70 | 0.51 | 0.33 | | | 16.0 | | | | 2.82 | " " |
| 1874.00 | 0.35 | 0.22 | 0.082 | 0.05 | 15.0 | | | | 2.64 | " " |
| 33 | 1.4 | 1.0 | | | 15.3 | | | | 2.61 | " " |
| 70 | 1.03 | 0.70 | | | 16.7 | | | | 2.64 | " " |
| 1875.00 | 0.38 | 0.24 | 0.22 | 0.13 | 15.8 | | | | 2.64 | " " |
| 35 | 0.49 | 0.32 | | | 16.2 | | | | 2.65 | " " |
| 70 | 0.50 | 0.32 | | | 16.7 | | | | 2.65 | " " |
| 1876.00 | 1.3 | 0.91 | 11.6 | 9.1 | 18.1 | | | | 2.74 | " " |
| 35 | 0.91 | 0.61 | | | 16.6 | | | | 2.85 | " " |

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# LABORATORY

**FINAL REPORT**

GECO
GEOPHYSICAL COMPANY OF NORWAY A-S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 3 cont.

Field State

| DEPTH | HORIZONTAL PERMEBILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1876.70 | 0.71 | 0.47 | | | 17.6 | | | | 2.66 | Conv. plug |
| 1877.00 | 1.7 | 1.2 | 0.53 | 0.34 | 19.2 | | | | 2.66 | " " |
| 35 | 0.26 | 0.16 | | | 14.9 | | | | 2.65 | " " |
| 70 | 0.45 | 0.29 | | | 15.4 | | | | 2.65 | " " |
| 1878.00 | 0.52 | 0.34 | 0.137 | 0.08 | 16.0 | | | | 2.65 | " " |
| 35 | 0.43 | 0.28 | | | 15.9 | | | | 2.65 | " " |
| 70 | 0.81 | 0.54 | | | 16.3 | | | | 2.63 | " " |
| 1879.00 | 0.76 | 0.51 | 0.210 | 0.13 | 16.2 | | | | 2.64 | " " |
| 35 | 1.2 | 0.83 | | | 17.5 | | | | 2.65 | " " |
| 70 | 0.98 | 0.67 | | | 18.1 | | | | 2.64 | " " |
| 1880.00 | 0.33 | 0.21 | 0.163 | 0.10 | 14.9 | | | | 2.63 | " " |
| 35 | 0.56 | 0.36 | | | 16.7 | | | | 2.65 | " " |
| 70 | 0.42 | 0.27 | | | 15.7 | | | | 2.64 | " " |
| 1881.00 | 0.44 | 0.28 | 0.164 | 0.10 | 15.9 | | | | 2.63 | " " |
| 35 | 0.33 | 0.21 | | | 15.0 | | | | 2.64 | " " |
| 70 | 0.24 | 0.15 | | | 14.5 | | | | 2.63 | " " |
| 1882.00 | 0.56 | 0.36 | 0.121 | 0.07 | 16.8 | | | | 2.62 | " " |
| 35 | 0.24 | 0.15 | | | 14.5 | | | | 2.64 | " " |
| 70 | 3.2 | 2.3 | | | 19.4 | | | | 2.72 | " " |
| 1883.00 | 23 | 19 | 3.6 | 2.6 | | 24.6 | | | 2.68 | |

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**FINAL REPORT**

GECO
GEOPHYSICAL COMPANY OF NORWAY A-S

Company NORSKE SHELL Date November 1982

Well 31/2-8 Core 3 cont.

Field State

| DEPTH | HORIZONTAL PERMEABILITY MILLIDARCY KA | KL | VERTICAL PERMEABILITY MILLIDARCY KA | KL | HELIUM POROSITY % | BRINE POROSITY % | PORE-SATURATION PORESATORAT SO | STW. | GRAIN DENS. | FORMATION DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1883.33 | 10.5 | 8.2 | | | | 22.9 | | | 2.69 | |
| 80 | 23 | 19 | | | 12.9 | | | | 2.74 | Conv. Plug |
| 1884.10 | 85 | 74 | 81 | 71 | 23.3 | | | | 2.70 | " " |
| 40 | 347 | 317 | | | 22.6 | | | | 2.71 | " " |
| 70 | 935 | 895 | | | 23.2 | | | | 2.72 | " " |
| 1885.00 | 228 | 208 | 127 | 113 | 15.2 | | | | 2.74 | " " |
| 35 | 4207 | 4127 | | | | 31.3 | | | 2.66 | |
| 70 | 2638 | 2558 | | | | 31.9 | | | 2.65 | |
| 1886.00 | 1779 | 1719 | 930 | 890 | | 32.0 | | | 2.65 | |
| 35 | 5242 | 5162 | | | | 32.8 | | | 2.65 | |
| 70 | 4525 | 4445 | | | | 35.2 | | | 2.65 | |
| 1887.00 | 151 | 136 | 68 | 59 | 12.6 | | | | 2.73 | Conv. Plug |
| 35 | 1463 | 1413 | | | | 30.0 | | | 2.64 | |
| 70 | 372 | 342 | | | | 24.7 | | | 2.70 | |
| 1888.10 | 2071 | 2011 | 612 | 582 | | 30.9 | | | 2.67 | |
| 40 | 1361 | 1311 | | | | 28.8 | | | 2.67 | |
| 70 | 863 | 823 | | | | 25.8 | | | 2.69 | |
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