



ESSO EXPL. AND PROD. NORWAY INC.

ROUTINE CORE ANALYSIS

WELL: 16/7-5

DATE: AUGUST 1984

ROUTINE CORE ANALYSIS

COMMENTS

GENERAL: Core analysis including horizontal and vertical permeability, porosity, grain density and fluid saturation have been performed on samples from well 16/7-5 at the depths requested by Esso Exploration and Production Norway Inc.

PREPARATION: The samples for analyses were collected by gently drilling with a one inch bore in the horizontal and vertical planes using liquid nitrogen as a cooling agent. The sample plugs were then cut to one inch lengths and mounted while still frozen in Hassler-type holders at a confining sleeve pressure of 15 bar. After thawing, the plugs were cleaned, dried and thus ready for petrophysical analyses.

MEASUREMENTS: AIR PERMEABILITY

Standard air permeability, k_a , was measured by injection of nitrogen gas at a net confining sleeve pressure of 15 bar and then converted empirically to liquid permeability, k_l , on all samples.

POROSITY AND GRAIN DENSITY

Porosity and grain density data were collected only from the horizontal sample plugs. Pore volume was determined by injection of helium gas at a net confining sleeve pressure of 15 bar. After dismounting, grain volume values were determined by a Boyle's law porosimeter using helium. Knowing also the weight of the sample, porosity and grain density were calculated.

FLUID SATURATION

Oil and water content (S_o and S_w) were determined by retort.

ABBREVIATIONS: NPP - no plug possible
NHPP - no horizontal plug possible
NVPP - no vertical plug possible
NMP - no measurement possible

FINAL REPORT

COMPANY : ESSO
 WELL : 16/7-5
 FIELD : 16/7
 STATE : NORWAY

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DATE: SEPTEMBER 1984

CORE NO.: 1



| Plug No. | Depth (meter) | Permeability (mD), vertical | | Porosity (%) He | Pore saturation So | Grain dens. g/cc | Formation Description |
|----------|---------------|-----------------------------|-------|--------------------|-----------------------|---------------------|---|
| | | Ka | Kl | | | | |
| 1 | 2590.00 | 426 | 397 | 19.6 | 0 | 2.67 | Sst.Lt-gry.F-gr.Sbrnodd.Fr-ant.w/Mic.Calc |
| 2 | 2590.00 | 201 | 183 | 19.1 | | 2.67 | A.A.Fr-srt. |
| 3 | 2590.65 | 191 | 174 | 17.3 | | 2.68 | A.A.M-gr. |
| 4 | 2591.00 | 264 | 243 | 23.0 | 0 | 2.65 | A.A.F-gr.decr.Calc. |
| 5 | 2591.35 | 7.1 | 5.5 | 23.3 | | 2.65 | A.A.W-ant. |
| 6 | 2591.65 | 1.4 | 1.1 | 14.0 | | 2.65 | A.A.VF-gr.W-srt. |
| 7 | 2591.95 | 438 | 408 | 19.0 | 0 | 2.65 | A.A.F-gr.Fr-ant. |
| 8 | 2592.30 | rmp | 0.16 | 15.8 | | 2.64 | A.A.W-ant.fis. |
| 9 | 2592.65 | 2.3 | 1.8 | 11.4 | 0 | 2.67 | Sst.Lt-gry.VF-gr.Sbrnodd.W-ant.w/Calc.Mic |
| 10 | 2593.00 | rmp | rmp | rmp | 0 | 80.9 | A.A.fis.W-srt. |
| 11 | 2593.35 | 0.23 | 0.17 | 6.9 | | 2.69 | Calc-sst.Lt-gry.F-gr.Sbrnodd.VW-ant. |
| 12 | 2593.65 | 0.33 | 0.25 | 9.2 | | 2.75 | A.A.Fr-srt.w/Pyr. |
| 13 | 2594.00 | 0.026 | 0.019 | 3.0 | 0 | 2.70 | A.A.VF-gr.w/o Pyr. |
| 14 | 2594.35 | 8.7 | 7.6 | 18.1 | | 2.65 | Sst.Lt-gry.F-gr.Sbrnodd.Fr-ant.w/Calc. |
| 15 | 2594.65 | 2.6 | 2.1 | 15.5 | | 2.65 | A.A.W-ant.Fr-srt. |
| 16 | 2595.00 | 0.33 | 0.25 | 6.7 | 0 | 2.70 | A.A.w/Pyr. |
| 17 | 2595.35 | rmp | 0.74 | rmp | | | A.A.Fr-ant.fis.w/o Pyr. |
| 18 | 2595.65 | 85.5 | 75.2 | 21.7 | | 2.64 | A.A.w/o Calc. |
| 19 | 2596.00 | 56.0 | 48.5 | 24.1 | 0 | 2.66 | A.A.ltl-Calc. |
| 20 | 2596.35 | 15.8 | 14.2 | 6.3 | | 2.70 | A.A.W-ant.incr-Calc.w/Pyr. |
| 21 | 2596.65 | 11.4 | 9.2 | 17.6 | | 2.66 | A.A.Fr-ant.w/o Pyr. |
| 22 | 2597.00 | 0.32 | 0.25 | 6.2 | 0 | 2.71 | A.A.VW-ant.incr-Calc.w/Pyr. |
| 23 | 2597.35 | 323 | 298 | 18.1 | | 2.73 | A.A.Fr-ant. |
| 24 | 2597.65 | 355 | 330 | 14.3 | | 2.69 | A.A.decr-Calc. |
| 25 | 2598.00 | 0.60 | 0.46 | 5.7 | 0 | 2.71 | A.A.VW-ant.incr-Calc. |
| 26 | 2598.35 | 0.63 | 0.49 | 7.4 | | 2.68 | A.A.w/o Pyr. |
| 27 | 2598.65 | rpp | | | | | |



GECO
 GEOPHYSICAL COMPANY
 OF NORWAY AS
 Petroleum Laboratory

FINAL REPORT

COMPANY : ESSO
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 FIELD : 16/7
 STATE : NORWAY

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CORE NO.: 1 (cont.)

DATE: SEPTEMBER 1984

| Plug No. | Depth (meter) | Permeability (mD), | | Porosity (%) | Pore saturation | Grain dens. | Formation Description |
|----------|---------------|---------------------------|-------------------------|--------------|-----------------|-------------|--------------------------|
| | | horizontal K _h | vertical K _v | | | | |
| 28 | 2599.35 | | | | | | A.A.Fr-cmt.fis. |
| 29 | 2599.70 | 69.7 | 52.1 | 18.8 | 0 | 85.1 | A.A.W-cmt.w/o fis. |
| 30 | 2600.00 | 0.18 | 0.69 | 4.9 | 0 | 52.4 | A.A.VW-cmt. |
| 31 | 2600.35 | 5.0 | 77.0 | 16.8 | | 2.66 | A.A.Fr-cmt.decr-Calc. |
| 32 | 2600.65 | nhpp | 35.1 | | | | |
| 33 | 2601.00 | | 2.3 | | 0 | 78.3 | A.A.Gry.W-srt.fis. |
| 34 | 2601.35 | 2.1 | 10.1 | 20.1 | | 2.67 | A.A.W-cmt.w/o fis. |
| 35 | 2601.65 | 2.1 | 0.61 | 18.3 | | 2.67 | A.A.Lt-gry.incr.Calc. |
| 36 | 2602.00 | 237 | 260 | 17.6 | 0 | 60.5 | A.A.w/Pyr. |
| 37 | 2602.35 | 1636 | 1361 | 28.0 | | 2.64 | A.A.Fr-cmt.w/o Calc.Pyr. |
| | 2603.10 | | | | | | |

COMPANY: ESSO

FIELD: 16/7

FILE:

WELL: 16/7-5

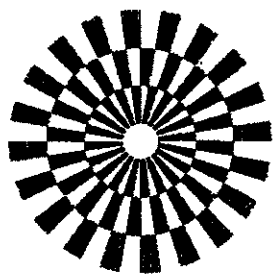
COUNTY:

DATE: AUG. 1984

LOCATION:

STATE: NORWAY

ELEV.:



CORE GRAPH

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIAL SUPPLIED BY THE CLIENT TO WHOM, AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE, THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGEMENT OF GECO LABORATORIES AND ITS OFFICERS AND EMPLOYEES.

GECO
GEOPHYSICAL COMPANY
OF NORWAY A.S

VERTICAL SCALE: 1:200

LABORATORY

CORE-GAMMA SURFACE-LOG

(PATENT APPLIED FOR)
GAMMA RAY
RADIATION INCREASE ----->
VOLTAGE: 985 VOLT
INTEGRATING TIME: 11 SEC
COUNTS PER MINUTE: 10 K

DEPTH
METER

POROSITY & PERMEABILITY mD

x HORIZONTAL
o VERTICAL

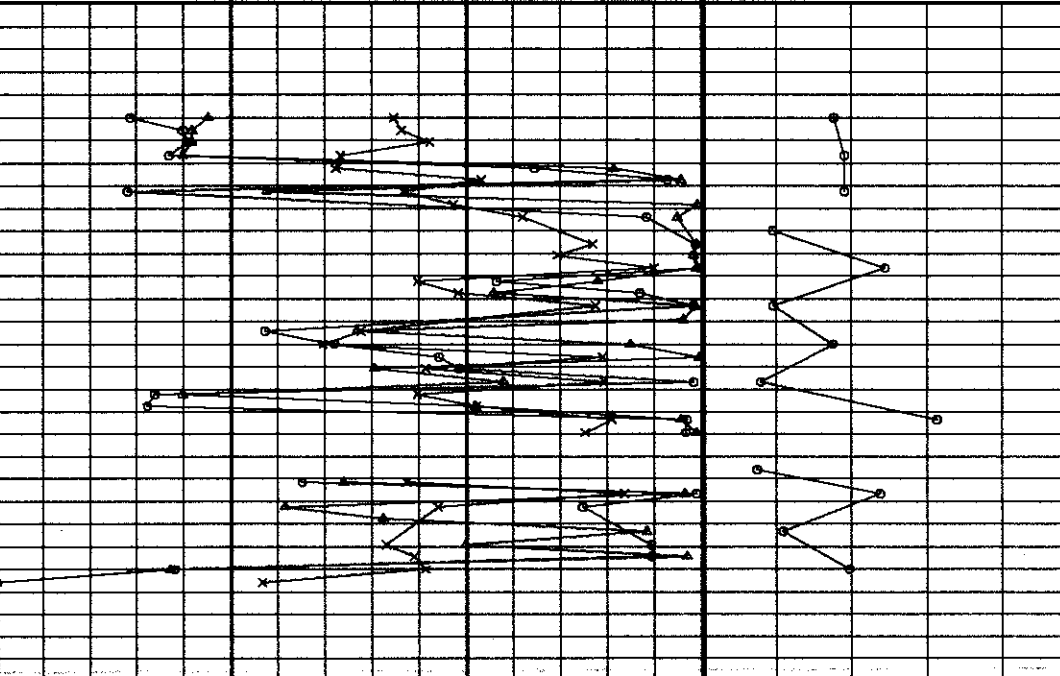
% 42 39 36 33 30 27 24 21 18 15 12 9 6 3 0
1000mD 100mD 10mD

FLUID SATURATION

OTHER OIL WATER
80 60 40 20 %

CORE NO: 1

2590.00
2593.00
2596.00
2599.00
2602.00
2605.00



LOGGED INTERVAL:

CORE NO.1 :
2590.00 - 2603.10