

Denne rapport
tilhører



UND DOK.SENTER

L.NR. 20084480033

KODE Well 15/12-4 nr 6

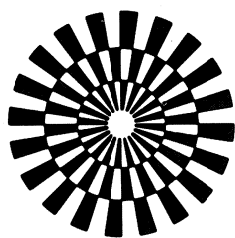
Returneres etter bruk

STATOIL

ROUTINE CORE ANALYSIS

WELL: 15/12-4

DATE: NOVEMBER 1984



GECO
GEOPHYSICAL COMPANY
OF NORWAY A-S



ROUTINE CORE ANALYSIS

COMMENTS

GENERAL: Core analyses including horizontal and vertical permeability, porosity, grain density and fluid saturation have been performed on core samples collected from well 15/12-4 at the depths requested by Statoil.

PREPARATION: The plug samples for analyses were collected by drilling with a one inch bore in the horizontal and vertical planes using water as a cooling agent. The sample plugs were then cut to lengths of one inch, cleaned in an extractor using methanol and toluene and dried at 60°C and 40% relative humidity under controlled conditions for 24 hours.

MEASUREMENTS: AIR PERMEABILITY

All samples were installed in a Hassler holder for air permeability measurements. Confining sleeve pressure was set at 15 bar. Standard air permeability, k_a , was measured by injection of nitrogen gas and then converted empirically to liquid permeability, k_l .

POROSITY AND GRAIN DENSITY

Porosity and grain density data were collected from the horizontal sample plugs only. Grain volume was measured by a Boyle's law porosimeter using helium while bulk volume was obtained by a mercury displacement pump. 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 : STATOIL
 WELL : 15/12-4
 FIELD : 15/12
 STATE : NORWAY

PAGE: 1

CORE NO.: 1

DATE: NOVEMBER 1984

Plug No.	Depth (meter)	Permeability (mD),		Porosity (%)	Pore saturation	Grain dens.	Formation Description
		horizontal	vertical				
		K _a	K _v	He	S _o	S _w	
		KAH	KLV	POB			GREENS
12	2439.00	0.091	0.067	26.0			Mrl-st.Lt-gry.Consol
13	2439.90	0.075	0.055	27.8			A.A.
14	2440.10	0.090	0.067	28.3	0	95.1	A.A.
15	2440.40	npp					
16	2440.70	0.20	0.28	15.8			Calc.sltst.Lt-brn.Consol.gry.mott.w/Sid
17	2441.05	nmp	nvpp	29.8	0	93.7	Mrl-st.Lt-gry.Consol.fis.
18	2441.40	nmp	nvpp	25.1			A.A.Brn-mott.
19	2441.70	0.11	0.081	22.7			A.A.w/o Brn-mott.fis.
20	2442.05	0.044	0.032	25.5	0	92.1	A.A.
21	2442.50	0.053	0.039	27.9			A.A.
22	2442.85	nmp	0.012	21.9			A.A.fis.
23	2443.20	nmp	0.006	21.9	0	94.8	A.A.
24	2443.55	npp	0.006	nmp			
25	2443.90	0.060	0.045	29.1			A.A.
26	2444.50	npp			0	96.1	
27	2445.75	nmp	nvpp	26.6			A.A.frac.
28	2446.05	nmp	nmp	27.2	0	97.5	A.A.fis.
29	2446.50	npp					
30	2446.85	nmp	0.020	21.3			A.A.
31	2447.20	nmp	0.016	23.5	0	97.7	A.A.ltl-Pyr.
	2449.00						

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Kun Disse legges inn på SPINX.



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 Petroleum laboratory

FINAL REPORT

PAGE: 1

COMPANY : STATOIL
 WELL : 15/12-4
 FIELD : 15/12
 STATE : NORWAY

CORE NO.: 2

DATE: NOVEMBER 1984

Plug No.	Depth (meter)	Permeability (mD),		Porosity (%)	Pore saturation	Grain dens.	Formation Description
		horizontal K _a	vertical K _v				
1	2494.50		0.029	12.7	8.0	2.71	Chk.Wh.Consol.Styl.frac.
2	2494.50		0.095	16.4	10.0	2.71	A.A.w/o frac.
3	2495.00	0.12	0.070	17.7	17.0	2.70	A.A.
4	2496.00	0.40	0.076	19.4	24.9	2.70	A.A.
5	2496.35	0.74	0.089	14.4	7.8	2.70	A.A.
6	2496.65	0.086	0.065	13.5	18.4	2.71	A.A.
7	2497.00	nmp	0.014 < 0.01	15.9	11.7	2.70	A.A.w/o Styl.
8	2497.35	0.023	0.019	14.4	3.5	2.70	A.A.
9	2497.65	0.016	0.017	13.4	83.4	2.70	A.A.
10	2498.00	0.014	0.010	14.9		2.71	A.A.
11	2498.35	0.015	0.011	13.6		2.71	A.A.
	2498.65	0.046	0.034				A.A.
	2498.66						

FINAL REPORT

COMPANY : STATOIL
WELL : 15/12-4
FIELD : 15/12
STATE : NORWAY

PAGE: 1

CORE NO.: 3 DATE: NOVEMBER 1984

Plug No.	Depth (meter)	Permeability (mD),		Porosity (%)	Pore saturation	Grain dens.	Formation Description
		horizontal K _a	vertical K ₁				
2499.00							
32	2499.00	nmp	<0.01	11.9	0.9	2.71	Ck.Wh.Consol.fis.w/Cl.
33	2499.35	nmp	<0.01	11.7		2.71	A.A.w/o Cl.
34	2499.65	0.003	<0.01	9.0		2.71	A.A.
35	2500.00	0.051	<0.01	10.9	0	2.70	A.A.frac.w/Cl.
36	2500.35	0.022	<0.01	14.4		2.70	A.A.w/o Cl.
37	2500.65	0.074	<0.01	9.5		2.70	A.A.w/Cl.
38	2501.00	0.004	<0.01	11.3	1.2	2.71	A.A.w/o frac.Cl.
39	2501.35	0.015	<0.01	12.1		2.70	A.A.
40	2501.65	0.001	<0.01	11.2		2.70	A.A.
41	2502.00	0.057	<0.01	13.8	0.9	2.70	A.A.frac.
42	2502.35	0.002	<0.01	12.2		2.71	A.A.w/o frac.
43	2502.65	0.020	<0.01	13.4		2.70	A.A.
44	2503.00	0.048	<0.01	11.7	0.9	2.70	A.A.
45	2503.35	0.008	<0.01	12.5		2.71	A.A.
46	2503.65	0.021	<0.01	13.3		2.70	A.A.
47	2504.00	0.015	<0.01	12.4	0.9	2.70	A.A.
48	2504.35	0.015	<0.01	10.2		2.70	A.A.
49	2504.65	0.007	<0.01	9.4		2.71	A.A.
50	2505.35	0.002	<0.01	9.4	1.1	2.71	A.A.
51	2505.65	0.034	<0.01	10.6		2.70	A.A.frac.w/Cl.
52	2506.00	0.003	<0.01	11.0	1.0	2.71	A.A.w/o frac.Cl.
53	2506.35	0.001	<0.01	8.9		2.71	A.A.
54	2506.65	0.002	<0.01	9.4		2.71	A.A.
55	2507.00	0.003	<0.01	10.6	1.3	2.71	A.A.
56	2507.35	0.003	<0.01	9.0		2.71	A.A.
57	2507.65	nmp	<0.01	10.0		2.71	A.A.frac.w/Cl.
58	2508.00	0.005	<0.01	10.4	0.8	2.71	A.A.w/o frac.Cl.

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FINAL REPORT

COMPANY : STATOIL
 WELL : 15/12-4
 FIELD : 15/12
 STATE : NORWAY

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CORE NO.: 3 (cont.)

DATE: NOVEMBER 1984



Plug No.	Depth (meter)	Permeability (mD),		He	Porosity (%)		Grain dens. g/cc	Formation Description
		horizontal K _a	vertical K _v		Sum.	S _o		
59	2508.35	0.007	<0.01	0.004	<0.01	12.6	2.71	A.A.
60	2508.65	0.012	<0.01	0.011	<0.01	12.1	2.71	A.A.
61	2509.00	0.011	<0.01	0.008	<0.01	14.2	2.71	A.A.
62	2509.35	0.007	<0.01	0.006	<0.01	11.1	2.71	A.A.
63	2509.65	0.012	<0.01	0.012	<0.01	12.0	2.71	A.A.
64	2510.00	0.005	<0.01	0.003	<0.01	10.0	2.71	A.A.
65	2510.35	0.007	<0.01	0.004	<0.01	10.2	2.72	A.A.
66	2510.65	0.009	<0.01	0.006	<0.01	12.8	2.71	A.A.
67	2511.00	0.021	0.015	0.020	0.015	13.7	2.71	A.A.
68	2511.35	0.006	<0.01	0.008	<0.01	10.7	2.71	A.A.
69	2511.65	0.008	<0.01	0.006	<0.01	11.4	2.71	A.A.
70	2512.65	0.007	<0.01	0.004	<0.01	11.5	2.72	A.A.
71	2513.35	0.023	0.017	0.018	0.013	15.2	2.71	A.A.
	2513.61							

FINAL REPORT

COMPANY : STATOIL
WELL : 15/12-4
FIELD : 15/12
STATE : NORWAY

PAGE: 1

CORE NO.: 4 DATE: NOVEMBER 1984

Plug No.	Depth (meter)	Permeability (mD),		Porosity (%)	Pore saturation	Grain dens.	Formation Description
		horizontal K _a	vertical K _v				
72	2902.00	0.81	0.63	12.4	5.0	44.8	Sst.Gnsh-gry.Vf-gr.Sbang.W-cmt.w/Glauc.
73	2902.00	0.66	0.51	10.6	5.0	44.8	A.A.Gry.W-srt.w/Calc.Pyr.Mic.Cl.
74	2902.40	0.56	0.43	10.7			A.A.decr-Calc.w/o Pyr.
75	2902.65	0.22	0.16	15.4	0.7	73.8	A.A.ltl-Pyr.
76	2903.00	0.77	0.60	12.7	0	76.0	A.A.
77	2903.50	0.37	0.28	11.3			A.A.incr-Pyr.
78	2903.85	0.087	0.065	10.8			A.A.decr-Pyr.
79	2904.35	0.048	0.035	10.0			A.A.
80	2904.65	0.47	0.36	9.8			A.A.Dk-gry.decr-Glauc.
81	2905.00	0.072	0.053	9.7	0.8	73.5	A.A.Gry.
82	2905.35	0.065	0.048	10.8			A.A.w/o Pyr.
83	2905.65	0.097	0.072	10.1			A.A.
84	2906.00	0.22	0.17	13.7	3.6	65.8	A.A.
85	2906.30	0.64	0.49	13.8			A.A.
86	2906.50	0.12	0.087	13.2			A.A.Dk-gry.
87	2907.00	0.76	0.59	13.0	0	57.0	A.A.Gry.
88	2907.40	0.20	0.15	12.7			A.A.frac.
89	2907.65	0.15	0.12	13.7			A.A.w/o frac.
90	2908.00	0.32	0.25	12.1	0	68.7	A.A.
91	2908.15	0.57	0.44	13.3			A.A.frac.
92	2908.65	0.54	0.42	17.3			A.A.
93	2909.00	0.26	0.20	16.3	0	55.6	A.A.
94	2909.35	1.6	1.2	16.2			A.A.Lt-gry.
95	2909.65	0.64	0.50	19.5	0.8	73.7	A.A.
96	2910.00	0.19	0.15	11.1			A.A.Dk-gry.frac.
97	2910.35	4.2	3.5	11.0			A.A.Gry.F-gr.w/o frac.
98	2910.70	2550	2505	15.7	8.6	40.0	Sst.Gry.F/M-gr.Sbang.W-cmt.w/Calc.Pyr.
	2911.00	1886	1848	30.4	8.6	40.0	Sst.Lt-gry.F-gr.Sbrndd.Fr-cmt.Fr-srt.



FINAL REPORT

PAGE: 2
 DATE: NOVEMBER 1984

COMPANY : STATOIL
 WELL : 15/12-4
 FIELD : 15/12
 STATE : NORWAY

CORE NO.: 4 (cont.)

Plug No.	Depth (meter)	Permeability (mD), vertical		Porosity (%) He	Pore saturation		Grain dens. g/cc	Formation Description
		K _a	K _v		S _o	S _w		
99	2911.35	2458	2413	30.1			2.65	A.A.scat.Mic.
100	2911.65	2393	2349	29.2			2.65	A.A.
101	2911.90	2938	2888	31.6	29.7	11.3	2.65	A.A.
102	2912.35	3327	3273	30.7		40.8	2.65	A.A.
103	2912.65	nmp	1366	31.2			2.65	A.A.fis.
104	2912.95	3040	2989	26.9	31.0	9.2	2.61	A.A.Gry.w/o fis.
105	2913.35	2606	2560	27.6			2.67	A.A.Lt-gry.
106	2913.65	3251	3198	30.0			2.65	A.A.
107	2913.90	2008	1968	30.5	28.1	5.2	2.63	A.A.Gry.
108	2914.65	519	502	23.2			2.70	A.A.Lt-gry.W-cmt.w/Calc.
109	2914.90	1429	1397	22.9	22.9	0	2.68	A.A.Fr-cmt.decr.Calc.
110	2915.35	1487	1455	23.3			2.68	A.A.
111	2915.70	1373	1342	24.5			2.69	A.A.
112	2916.00	406	392	17.6	22.4	0	2.70	A.A.W-cmt.incr-Calc.
113	2916.35	1354	1323	23.3		79.1	2.69	A.A.Fr-cmt.decr.Calc.
114	2916.65	1680	1645	25.8			2.68	A.A.
115	2917.00	565	547	21.5	21.9	0	2.71	A.A.W-cmt.incr.Calc.
116	2917.35	387	373	20.2		79.6	2.71	A.A.Fr-cmt.decr.Calc.
117	2917.65	2075	2034	25.0			2.68	A.A.
118	2918.00	3423	3368	31.0	24.9	0	2.65	A.A.
119	2918.35	2463	2418	29.9		80.0	2.66	A.A.
120	2918.65	1574	1540	28.4			2.65	A.A.W-cmt.
121	2919.65	3686	3629	29.5			2.65	A.A.
	2919.70							

COMPANY: STATOIL

FIELD: 15/12

FILE:

WELL: 15/12-4

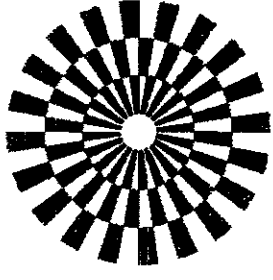
COUNTY:

DATE: NOV-1984

LOCATION:

STATE: NORWAY

ELEV.:



CORE GRAPH

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIAL SUPPLIED BY THE CLIENT TO ASON, AND FOR HIS EXCLUSIVE AND CONFIDENTIAL USE. THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGMENT 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

HORIZONTAL
VERTICAL
1000mD 100mD 10mD 0

FLUID SATURATION

OTHER OIL WATER
80 60 40 20 %

CORE NO: 1

CORE NO: 2

CORE NO: 3

2439.00
2442.00
2445.00
2448.00
2451.00
2495.00
2498.00
2501.00
2499.00
2502.00
2505.00
2508.00
2511.00
2514.00

LOGGED INTERVAL:

CORE NO.1 :
2439.00 - 2449.00

CORE NO.2 :
2494.50 - 2498.66

CORE NO.3 :
2499.00 - 2513.61

COMPANY: STATOIL

FIELD: 15/12

FILE:

WELL: 15/12-4

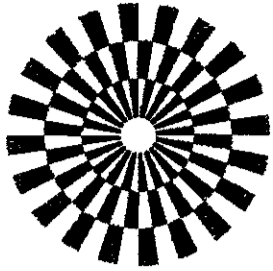
COUNTY:

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LOCATION:

STATE: NORWAY

ELEV.:



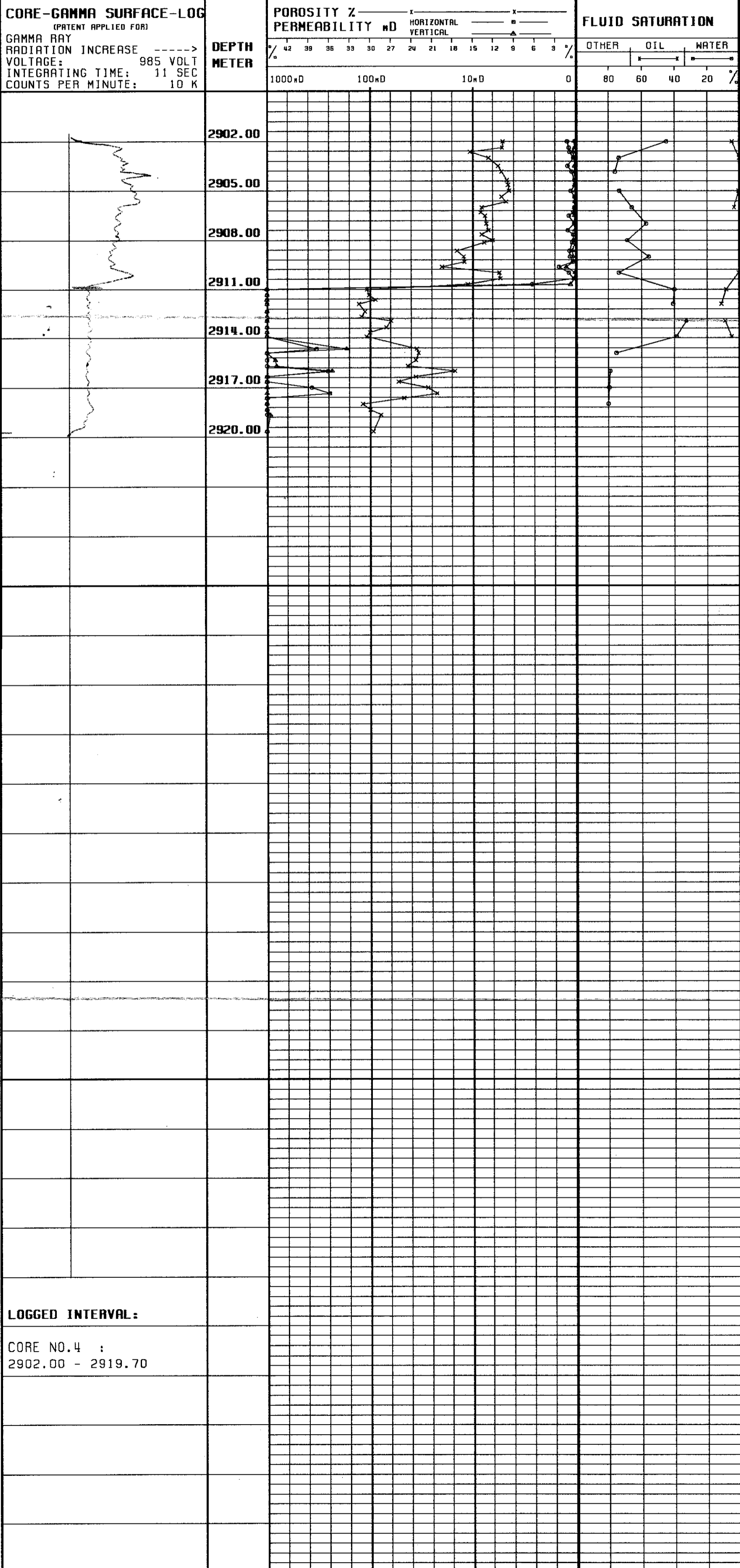
CORE GRAPH

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VERTICAL SCALE: 1:200

LABORATORY



CORE NO: 4