

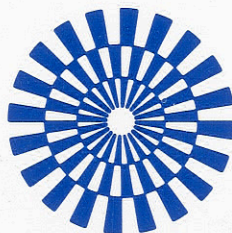
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STATOIL

ROUTINE CORE ANALYSIS

WELL: 6406/3-1

DATE: SEPTEMBER 1984



GECO
GEOPHYSICAL COMPANY
OF NORWAY AS



STATOIL
ROUTINE CORE ANALYSIS
WELL: 6406/3-1
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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 6406/3-1 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 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

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Plug No.	Depth (meter)	Permeability (mD),				Porosity (%)		Pore saturation		Grain dens. g/cc	Formation Description
		horizontal K _a	K _l	vertical K _a	K _l	He	Sum.	S _o	S _w		
	3783.00										
1	3783.20	1608	1573	2322	2279	24.8	18.2	0.0	20.3	2.65	Sst.Lt-gry.M-gr.Sbang.W-cmt.w/Mic.
2	3783.55	754	733	1164	1136	21.0				2.65	A.A.W-srt.Bdg.ltl-Calc.
3	3783.85	1295	1265	1445	1413	23.4				2.66	A.A.w/o Bdg.
4	3784.30	2047	2007	995	970	23.7	23.9	0.4	27.3	2.66	A.A.w/o Calc.
5	3784.65	816	794	115	109	22.1				2.68	A.A.w/Pyr.
6	3785.00	216	206	1558	1525	20.6	21.9	0.0	47.8	2.66	A.A.mtrx.w/Calc.
7	3785.30	1035	1009	842	820	22.5				2.66	A.A.w/o mtrx.
8	3785.65	307	295	45.3	42.0	19.6				2.67	A.A.
9	3786.00	618	599	1189	1160	22.0	18.5	2.0	51.1	2.68	A.A.
10	3786.30	355	342	114	108	15.5				2.66	A.A.M/Crs-gr.P-srt.
11	3786.65	151	143	179	170	17.7				2.69	A.A.M-gr.incr-Calc.
12	3787.00	94.5	88.7	36.0	33.4	15.5	18.1	0.0	37.7	2.70	A.A.incr-Pyr.
13	3787.30	8.1	7.1	0.68	0.52	15.1				2.73	A.A.P-srt.
14	3787.65	0.24	0.18	0.37	0.29	3.2				2.73	Calc-sst.Lt-gry.M-gr.Sbang.VW-cmt w/Pyr.
15	3788.00	0.33	0.25	0.41	0.32	3.2	3.9	0.0	22.5	2.70	A.A.P-srt.
16	3788.30	4.8	4.1	0.77	0.59	8.0				2.73	A.A.
17	3788.65	0.35	0.27	0.42	0.32	3.2				2.72	A.A.
18	3789.00	0.33	0.25	0.39	0.30	4.2	2.5	0.0	8.9	2.70	A.A.
19	3789.30	0.44	0.34	2.1	1.7	5.2				2.70	A.A.
20	3789.65	700	680	131	124	17.8				2.66	Sst.Lt-gry.M-gr.Sbang.W-cmt.P-srt.w/Calc
21	3790.00	419	405	195	186	17.9	19.2	0.0	37.4	2.66	A.A.
22	3790.30	1528	1496	720	699	19.3				2.64	A.A.Fr-srt.w/o Calc.
23	3790.65	697	677	1106	1079	16.6				2.65	A.A.P-srt.
24	3791.00	1601	1567	1411	1379	21.1	21.4	0.0	40.4	2.64	A.A.Fr-srt.
25	3791.30	2835	2786	2807	2758	22.8				2.65	A.A.
26	3791.65	674	654	51.5	48.2	20.1				2.64	A.A.mtrx.
27	3792.00	1308	1278	716	696	20.7	21.3	0.4	38.8	2.64	A.A.W-srt.w/o mtrx.

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Plug No.	Depth (meter)	Permeability (mD),				Porosity (%)		Pore saturation		Grain dens. g/cc	Formation Description
		horizontal K _a	K _l	vertical K _a	K _l	He	Sum.	S _o	S _w		
	3794.50										
33	3794.65	1853	1815	1371	1339	20.6				2.65	Sst.Lt-gry.M-gr.Sbang.Fr-cmt.w/Scat-Mic.
34	3795.00	2126	2086	1398	1366	20.8	21.5	0.0	37.4	2.65	A.A.W-srt.
35	3795.30	2220	2179	1988	1949	21.9				2.64	A.A.
36	3795.65	1571	1537	1432	1400	21.3				2.65	A.A.
37	3796.00	1058	1032	902	878	21.4	19.2	0.0	34.0	2.65	A.A.
38	3796.30	2738	2690	1925	1886	20.8				2.64	A.A.
39	3796.65	1887	1849	1870	1833	19.8				2.65	A.A.
40	3797.00	2144	2103	1746	1710	20.0	19.5	0.0	31.7	2.64	A.A.
41	3797.30	2795	2746	1144	1116	20.1				2.64	A.A.
42	3797.65	2796	2748	1352	1321	20.5				2.64	A.A.
43	3798.00	1345	1314	420	405	18.6	20.5	0.0	35.7	2.64	A.A.
44	3798.65	2094	2053	2083	2043	19.8				2.64	A.A.
45	3799.00	3907	3847	3784	3725	20.6	20.2	0.0	38.7	2.64	A.A.
46	3799.30	2344	2300	1885	1848	21.4				2.65	A.A.
47	3799.65	1080	1053	610	592	18.7				2.65	A.A.
48	3800.00	3339	3285	1796	1760	22.4	22.3	0.0	37.1	2.64	A.A.
49	3800.30	1246	1217	854	830	20.2				2.65	A.A.
50	3800.65	1052	1025	866	842	19.3				2.65	A.A.F/M-gr.
51	3801.00	2234	2192	2246	2203	20.7	21.4	0.4	44.1	2.64	A.A.M-gr.
52	3801.30	1980	1941	1492	1459	20.7				2.65	A.A.
53	3801.65	1613	1578	1076	1049	21.5				2.65	A.A.
54	3802.00	1685	1650	1243	1214	20.6	19.8	0.0	41.4	2.65	A.A.
55	3802.30	814	792	304	292	19.7				2.65	A.A.F/M-gr.incr-Mic.
56	3802.65	191	182	20.4	18.7	15.9				2.73	A.A.w/Calc.ltl-Pyr.Sid.
57	3803.00	594	575	74.6	70.1	18.6	18.2	2.1	37.0	2.65	A.A.W-cmt.w/o Calc.Pyr.Sid.
58	3803.30	954	929	477	461	19.8				2.65	A.A.
59	3803.65	1196	1168	209	200	19.8				2.65	A.A.
60	3804.00	756	734	540	524	18.2	19.2	0.5	47.9	2.65	A.A.
61	3804.30	670	650	456	440	17.4				2.65	A.A.

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Plug No.	Depth (meter)	Permeability (mD),				Porosity (%)		Pore saturation		Grain dens. g/cc	Formation Description
		horizontal K _a	K _l	vertical K _a	K _l	He	Sum.	S _o	S _w		
62	3804.65	1008	982	614	595	19.6				2.65	A.A.
63	3805.00	1080	1053	695	675	19.8	20.4	0.4	40.1	2.65	A.A.
64	3805.30	886	862	472	456	19.8				2.66	A.A.
65	3805.65	796	773	353	340	18.1				2.65	A.A.
66	3806.00	786	763	442	427	18.5	18.3	0.0	43.8	2.65	A.A.
67	3806.65	1080	1053	683	663	20.0				2.65	A.A.Fr-cmt.
68	3807.00	720	699	312	299	18.7	17.3	0.0	35.9	2.66	A.A.W-cmt.
69	3807.30	14.0	12.7	8.5	7.5	13.1				2.71	A.A.Bdg.w/Calc.ltl-Pyr.Sid
70	3807.65	189	181	13.0	11.7	15.9				2.67	A.A.Fr-srt.w/o Bdg.Pyr.Sid
71	3808.00	310	298	14.6	13.2	16.5	15.5	0.0	45.2	2.66	A.A.ltl-Calc.
72	3808.30	315	303	77.1	72.6	16.0				2.66	A.A.
73	3808.65	347	334	45.8	42.7	18.5				2.66	A.A.
74	3809.00	445	430	476	460	18.0	17.9	0.0	35.7	2.65	A.A.
75	3809.30	1377	1346	12.1	10.9	19.2				2.65	A.A.M-gr.w/o Calc.
76	3809.65	962	936	762	741	20.2				2.65	A.A.F/M-gr.
77	3810.00	706	685	350	337	19.9	20.5	0.0	39.2	2.65	A.A.
78	3810.30	732	711	158	150	19.4				2.65	A.A.
79	3810.65	536	519	340	327	20.0				2.65	A.A.
80	3811.00	622	602	125	119	20.0	20.3	0.0	37.0	2.65	A.A.
81	3811.30	706	686	515	498	19.6				2.65	A.A.
82	3811.65	845	822	347	334	19.4				2.65	A.A.
83	3812.00	561	543	406	391	20.5	20.6	0.4	34.7	2.65	A.A.
84	3812.30	530	513	154	146	18.8				2.65	A.A.
85	3812.65	648	629	104	98.2	18.6				2.65	A.A.
86	3813.00	481	465	809	787	18.5	18.7	0.5	34.3	2.66	A.A.ltl-Calc.
87	3813.30	1132	1105	576	558	18.8				2.65	A.A.M-gr.w/o Calc.
88	3814.00	753	732	341	329	19.4	19.9	0.5	44.8	2.65	A.A.

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Plug No.	Depth (meter)	Permeability (mD),				Porosity (%)		Pore saturation		Grain dens. g/cc	Formation Description
		horizontal K _a	K _l	vertical K _a	K _l	He	Sum.	S _o	S _w		
	3822.00										
107	3822.00	496	480	528	511	19.6	22.1	2.4	34.1	2.65	Sst.Lt-gry.F/M-gr.Sbang.Fr-cmt.w/Mic.
108	3822.30	501	485	515	499	20.3				2.64	A.A.W-srt.
109	3822.65	281	270	427	39.7	19.6				2.66	A.A.
110	3823.00	428	414	255	244	20.0	19.7	0.0	32.6	2.65	A.A.
111	3823.30	727	706	804	782	21.2				2.65	A.A.
112	3823.65	836	813	467	452	21.9				2.65	A.A.
113	3824.00	538	521	438	422	20.6	19.4	0.0	34.3	2.65	A.A.
114	3824.30	825	803	633	613	21.8				2.65	A.A.
115	3824.65	564	546	710	689	21.7				2.65	A.A.
116	3825.00	585	567	336	323	18.8	20.9	0.4	23.3	2.65	A.A.w/Calc.
117	3825.30	1160	1132	968	943	19.6				2.65	A.A.M-gr.w/o Calc.
118	3825.65	1151	1123	511	494	20.1				2.64	A.A.
119	3826.00	531	514	284	273	19.1	19.6	0.5	30.2	2.66	A.A.F/M-gr.
120	3826.30	1626	1592	629	610	18.2				2.65	A.A.M-gr.
121	3826.65	576	557	163	155	18.8				2.64	A.A.F/M-gr.
122	3827.00	1097	1069	1109	1083	18.8	20.0	0.5	31.4	2.65	A.A.M-gr.
123	3827.30	586	568	411	397	19.9				2.65	A.A.F/M-gr.
124	3827.65	664	644	566	548	20.9				2.65	A.A.
125	3828.00	348	335	17.3	15.6	18.6	22.0	0.4	26.9	2.65	A.A.Mic-lam.
126	3828.30	180	171	46.5	43.2	17.1				2.65	A.A.W-cmt.
127	3828.65	171	162	62.8	58.5	17.5				2.65	A.A.
128	3829.00	406	392	29.7	27.1	17.8	20.0	0.5	30.4	2.65	A.A.
129	3829.30	667	647	86.9	81.7	17.5				2.65	A.A.Fr-srt.w/o Mic-lam.w/Mic.
130	3829.65	720	699	178	170	19.1				2.65	A.A.Fr-cmt.W-srt.
131	3830.00	853	829	325	312	19.8	20.5	0.0	26.6	2.66	A.A.
132	3830.30	639	620	530	513	19.9				2.66	A.A.
133	3830.65	287	275	63.3	59.1	18.9				2.66	A.A.Mic-lam.w/Calc.
134	3831.00	367	353	107	101	18.9	21.7	0.4	31.1	2.70	A.A.ltl-Sid.

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Plug No.	Depth (meter)	Permeability (mD),				Porosity (%)		Pore saturation		Grain dens. g/cc	Formation Description
		horizontal K _a	K _l	vertical K _a	K _l	He	Sum.	S _o	S _w		
135	3831.30	63.4	59.1	36.9	34.0	13.7				2.69	A.A.W-cmt.
136	3831.65	362	349	92.8	87.3	16.0				2.65	A.A.decr-Calc.w/o Sid.
137	3832.00	757	736	439	424	17.4	18.7	0.5	31.2	2.65	A.A.
138	3832.40	497	480	130	122	17.4				2.66	A.A.
139	3832.65	319	306	19.1	17.2	15.9				2.66	A.A.Fr-srt.
140	3833.00	772	750	248	238	17.2	17.3	0.5	29.4	2.65	A.A.W-srt.
141	3833.30	1159	1131	405	391	20.9				2.64	A.A.Fr-cmt.
142	3833.65	1718	1681	1605	1571	19.8				2.64	A.A.
143	3834.00	274	263	8.2	7.2	15.2	15.3	0.6	31.8	2.66	A.A.W-cmt.
144	3834.30	307	295	5.1	4.4	15.9				2.66	A.A.
145	3834.65	168	160	7.1	6.3	14.1				2.66	A.A.w/Calc.
146	3835.00	510	493	88.0	82.9	17.4	17.9	0.5	32.6	2.65	A.A.w/o Calc.
147	3835.30	400	385	40.6	37.4	17.5				2.66	A.A.
148	3835.65	245	234	5.1	4.3	14.8				2.66	A.A.w/Calc.
149	3836.00	430	414	167	159	17.9	17.5	0.5	34.6	2.65	A.A.w/o Calc.
150	3836.30	257	246	60.6	56.5	16.8				2.67	A.A.
151	3836.65	467	452	102	96.4	17.9				2.66	A.A.
152	3837.00	868	845	559	541	19.1	20.3	0.5	31.6	2.65	A.A.
153	3837.30	239	228	123	117	17.7				2.66	A.A.
154	3837.65	860	836	156	148	18.6				2.65	A.A.Fr-cmt.
155	3838.30	637	618	217	207	18.7	21.4	0.4	31.7	2.66	A.A.Bdg.ltl-Calc.
156	3838.65	0.37	0.28	0.32	0.24	1.1				2.68	Calc-sst.Lt-gry.F/M-gr.Sbang.VW-cmt.
157	3839.00	528	511	24.4	22.1	18.6	20.9	1.8	30.0	2.65	Sst.Lt-gry.F/M-gr.Sbang.Fr-cmt.w/Mic.
158	3839.30	1764	1728	861	838	20.1				2.65	A.A.M-gr.W-srt.
159	3839.65	462	446	277	266	19.5				2.66	A.A.F/M-gr.w/Calc.
160	3840.00	531	514	295	283	19.8	21.0	0.0	34.8	2.65	A.A.Mic-lam.w/o Calc.
161	3840.30	453	438	45.1	41.8	19.1				2.66	A.A.
162	3840.65	597	578	405	391	19.6				2.68	A.A.Calc-lam.w/C.
163	3841.00	3398	3343	4175	4113	19.4	22.6	0.4	34.5	2.66	A.A.ltl-Calc.C.

