OPERATOR STATOIL

WELL NO. 7119/12-1

MATERIAL CONSUMPTION & COST ANALYSIS

36" HOLE DRILLED TO 288 Meters ~~Feet~~ 30" CASING SET AT 287 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 63 Meters ~~Feet~~ DAYS ON INTERVAL 6

DRILLING FLUID SYSTEM Spud mud.

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	7	52	+ 45	6.448,-
Wyoming Bentonite	M/T	12	69	+ 57	20.631,-
Wyoming Bentonite	50 kg	-	575	+ 575	7.992,5
Caustic Soda	25 kg	7	72	+ 65	896,4
$CaCl_2$	50 kg	6	5	- 1	97,5
Soda Ash	50 kg	6	27	+ 21	472,5
Lime	25 kg	3	-	- 3	-

COST/DAY $ 6.089.65 TOTAL COST FOR INTERVAL $ 36.537.9

COST/Mt. or Ft. $ 579.97 PROG. COST FOR INTERVAL $ 3.726.8

ENGR. COST $ 5.760.- COST VARIANCE FOR INTERVAL $ + 32.811.1

OPERATOR STATOIL

WELL NO. 7119/12-1

MATERIAL CONSUMPTION & COST ANALYSIS

26" HOLE DRILLED TO 615 Meters ~~Feet~~ 20" CASING SET AT 600 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 327 Meters ~~Feet~~ DAYS ON INTERVAL 6

DRILLING FLUID SYSTEM Spud mud

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	27	127	+ 100	15.748.-
Bentonite	M/T	28	27	- 1	8.073,-
Bentonite	50 kg	-	486	+ 486	6.755.4
Caustic Soda	25 kg	12	41	+ 29	510.45
Soda Ash	50 kg	5	17	+ 12	297,50
Chr.Lignosulf.	25 kg	-	33	+ 33	518.10
Al.Stearate	25 kg	-	3	+ 3	189,-
Anco detergent	200 l	-	24	+ 24	7,080,-
Sunflo 300 *	200 l	-	1	+ 1	890,-
Lime	25 kg	10	-	-10	-
* Price from Norsk Pet.Service 1980 Price list.					

COST/DAY $ 6.676.91 TOTAL COST FOR INTERVAL $ 40.061.45

COST/Mt. or Ft. $ 122.51 PROG. COST FOR INTERVAL $ 12.001.90

ENGR. COST $ 4.320.- COST VARIANCE FOR INTERVAL $ + 28.059.55

OPERATOR STATOIL

WELL NO. 7119/12-1

MATERIAL CONSUMPTION & COST ANALYSIS

17½" HOLE DRILLED TO 1.565 Meters ~~Feet~~ 13-3/8" CASING SET AT 1.550 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 950 Meters ~~Feet~~ DAYS ON INTERVAL 11

DRILLING FLUID SYSTEM Bentonite/Lignosulfonate

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	93	93	-	11.532,-
Bentonite	M/T	31	-	-31	-
Bentonite	50 kg	-	456	+ 456	6.338.40
Chr. Lignosulfonate	25 kg	250	352	+ 102	5.526.40
Caustic Soda	25 kg	65	227	+ 162	2.826.15
Soda Ash	50 kg	-	12	+ 12	210,-
Sodium Bicarbonate	50 kg	-	41	+ 41	717,50
CMC LoVis	25 kg	30	50	+ 20	2.650,-
CMC HiVIs	25 kg	-	39	+ 39	2.184,-
Aluminium Stearate	25 kg	-	5	+ 5	315,-
Anco Deterg.	200 l drum	15	15	-	4.425,-
Nut plug Fine	25 kg	-	12	+ 12	174,-
Nut plug Medium	25 kg	-	30	+ 30	435,-

COST/DAY $ 3.292.50 TOTAL COST FOR INTERVAL $ 37.333.45

COST/Mt. ~~or Ft~~ $ 38.12 PROG. COST FOR INTERVAL $ 31.550,25

ENGR. COST $ 7.950,- COST VARIANCE FOR INTERVAL $ + 4.667.20

OPERATOR STATOIL

WELL NO. 7119/12-1

MATERIAL CONSUMPTION & COST ANALYSIS

12-1/4" HOLE DRILLED TO 2.516 Meters ~~Feet~~ 9-5/8" CASING SET AT 2.504 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 951 Meters ~~Feet~~ DAYS ON INTERVAL 24

DRILLING FLUID SYSTEM Bentonite/Lignosulfonate

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	235	87	- 148	10.788,-
Bentonite	M/T	16	-	- 16	-
Bentonite	50 kg	-	606	+ 606	8.423.40
Chr.Lignosulfonate	25 kg	350	438	+ 88	6.876,60
CMC Lo Vis	25 kg	75	285	+ 210	15.105,-
CMC Hi Vis	25 kg	-	4	+ 4	224,-
Drispac Superlo	25 kg	-	14	+ 14	2.128,-
Caustic Soda	25 kg	75	168	+ 93	2.091,60
Soda Ash	50 kg	-	20	+ 20	350,-
Sodium Bicarbonate	50 kg	6	17	+ 11	297,50
Aluminium Stearate	25 kg	-	1	+ 1	63,-
Chr.Lignite	25 kg	150	-	- 150	-
Lime	25 kg	25	-	- 25	-

COST/DAY $ 1.931,13 TOTAL COST FOR INTERVAL $ 46.347,10

COST/Mt ~~xxxFt~~ $ 48,74 PROG. COST FOR INTERVAL $ 47.965,25

ENGR. COST $ 15.600 COST VARIANCE FOR INTERVAL - $ 1.618,15

OPERATOR STATOIL

WELL NO. 7119/12-1

MATERIAL CONSUMPTION & COST ANALYSIS

8½" HOLE DRILLED TO 3.088 Meters ~~Feet~~ 7" ~~CASING~~ LINER SET AT 3.087 Meters ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 572 Meters ~~Feet~~ DAYS ON INTERVAL 35

DRILLING FLUID SYSTEM Bentonite/Lignosulfonate

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	150	231	+ 81	28.644,-
Bentonite	M/T	12	-	- 12	-
Bentonite	50 kg	-	671	+ 671	9.326,90
Chr.Lignosulfonate	25 kg	225	407	+ 182	6.389,90
Chr.Lignite	25 kg	100	158	+ 58	3.602.40
CMC Lo Vis	25 kg	30	172	+ 142	9.116,-
CMC Hi Vis	25 kg	-	2	+ 2	112,-
Caustic Soda	25 kg	50	178	+ 128	2.216,10
Drispac superlo	2 kg	-	2	+ 2	304,-
Soda Ash	50 kg	-	14	+ 14	245,-
Sod.Bicarb.	50 kg	5	7	+ 2	122,50
Al.Stearate	25 kg	-	3	+ 3	189,-
Limer	25 kg	20	-	- 20	-

COST/DAY $ 1.721,94

TOTAL COST FOR INTERVAL $ 60.267,80

COST/Mt. ~~or/Ft.~~ $ 105.36

PROG. COST FOR INTERVAL $ 30.390,50

ENGR. COST $ 22.990,-

COST VARIANCE FOR INTERVAL $ + 29.877,30

OPERATOR STATOIL

WELL NO. 7119/12-1 Plug and abandon

MATERIAL CONSUMPTION & COST ANALYSIS

HOLE DRILLED TO Meters / Feet

CASING SET AT Meters / Feet

ACTUAL AMOUNT OF HOLE DRILLED Meters / Feet

DAYS ON INTERVAL 5

DRILLING FLUID SYSTEM Bentonite/Lignosulfonate

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T		3		372,-
Chr.Lignosulfonate	25 kg		37		580,90
Caustic Soda	25 kg		12		149,40
Soda Ash	50 kg		2		35,-
Sodium Bicarb.	50 kg		6		105,-
Al.Stearate	25 kg		6		378,-

COST/DAY $ 324,06

TOTAL COST FOR INTERVAL $ 1.620,30

COST/Mt. ~~ox5tx~~ -

PROG. COST FOR INTERVAL

ENGR. COST $ 2.400,-

COST VARIANCE FOR INTERVAL

OPERATOR STATOIL

WELL NO. 7119/12-1

TOTAL CONSUMPTION & COST ANALYSIS

TOTAL DEPTH 3.088 Meters ~~Feet~~

TOTAL HOLE DRILLED 2.863 Meters ~~Feet~~

TOTAL DAYS 87

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
Barite	M/T	613	593	- 20	73.532,-
Wyoming Bentonite	M/T	117	96	- 21	28.704,-
Wyoming Bentonite	50 kg	-	2.794	+2.794	38.836,60
Caustic Soda	25 kg	257	698	+ 441	8.690,10
Soda Ash	50 kg	9	92	+ 83	1.610,-
Lime	25 kg	75	-	- 75	
Sodium Bicarbonate	50 kg	11	71	+ 60	1.242,50
Chr.Lignosulfonate	25 kg	1.025	1.267	+ 242	19.891,90
Chr.Lignite	25 kg	350	158	- 192	3.602,40
CMC Lo Vis	25 kg	165	507	+ 342	26.871,-
CMC Hi Vis	25 kg	-	45	+ 45	2.520,-
Anco detergent	200 l	15	39	+ 24	11.505,-
$CaCl_2$	50 kg	-	5	+ 5	97,50
Aluminium Stearate	25 kg	-	18	+ 18	1.134,-
Surflo 300	200 l	-	1	+ 1	890,-
Nut plug Fine	25 kg	-	12	+ 12	174,-
Nut plug Medium	25 kg	-	30	+ 30	435,-
Drispac superlo	25 kg	-	16	+ 16	2.432,-

COST/DAY $ 2.553,66

TOTAL COST FOR INTERVAL $ 222.168,-

COST/Mt. ~~XXXX Ft.~~ $ 77,60

PROG. COST FOR INTERVAL $ 152.124,65

ENGR. COST $ 59.020,-

COST VARIANCE FOR INTERVAL $ + 70.043,35

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Pr.Hyd.Bent/Seawater ENGINEERS Lund/Jensen

Day No.	DATE 1980	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES: DENSITY PPG ☐ SG ☐	VISCOSITY: sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis: Cl⁻ ppm	Ca. ++ ppm	Pf	RETORT: % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
														T.H.										
1	15/6	239	1,08	195	50	8	84		N.C.	N.C.	N.C.	11,8										0,13	38,12	
2	16/6	269	1,08	170	49	8	82		N.C.	N.C.	N.C.	11,6										0,14	36,52	
3	17/6	287	1,05	120+	50	10	80		N.C.	N.C.	N.C.	11,1										0,17	30,35	
4	18/6	255	1,05	120+	45	12	66		N.C.	N.C.	N.C.	10,4										0,23	17,85	Reaming (Boulder)
5	19/6	288	1,05	120+	47,5	11	73		N.C.	N.C.	N.C.	10,8										0,20	23,66	
6	20/6	288	1,05	140	50,5	10	81		N.C.	N.C.	N.C.	11,2										0,17	31,08	
7	21/6	329	1,04	55	19	6	26	21/25	N.C.	N.C.	N.C.	10,4	8000	550	0,5	-	2	<1/4	15			0,63	0,31	
8	22/6	506	1,07	55	26,5	4	45	19/23	N.C.	N.C.	N.C.	10,0	11000	900	0,2	-	3,7	TR	17½			0,18	10,71	17½" bit w/26" U.R.
9	23/6	438 reaming	1,08	46	23,5	4	39	21/25	N.C.	N.C.	N.C.	9,8	12000	600	0,25	-	4,2	TR	17½			0,24	5,56	26" owner-reamer
10	24/6	615	1,20	49	29	6	46	25/28	N.C.	N.C.	N.C.	9,8	13000	450	0,2	-	8	TR	17,5					
11	25/6	615	1,20	47	28	7	42	20/23	N.C.	N.C.	N.C.	10,0	13500	650	0,70	-	8	TR	17,5					
12	26/6	615	1,09	49	16	6	20	8/16	17	2	N.C.	10,2	9800	350	0,25	-	6	TR	25					Mud for next section
13	27/6	615	1,1	49	27,5	17	11	3/15	7,8	1	N.C.	9,8	6500	350	0,2	-	8	TR	25					
14	28/6	705	1,1+	48	19,5	13	13	12/45	9,5	2	N.C.	11,5	8000	300	0,75	-	8	TR	25					

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Pr.Hyd.Bent/Ligno/Seawater ENGINEERS Jensen/Wiik/Bjørheim

Day No.	DATE 1980	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES: DENSITY PPG ☐ SG ☒	VISCOSITY: sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis: Cl⁻ ppm	Ca ++ ppm	Pf	RETORT: % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
15	29/6	1056	1,11	42	13,5	7	13	10/16	12	2	N.C.	10,0	13000	450	0,2	0	5	TR	22,5						
16	30/6	1270	1,10	39	9,5	6	7	4/13	11	1	N.C.	9,8	16000	950	0,45	0	5	TR	20						T.H. incr.due to red. in ph.
17	1/7	1363	1,20	56	21	13	16	8/20	9,5	1	-	10,0	16000	230	0,85	-	11	TR	22,5						
18	2/7	1565	1,20	47	18	11	14	5/21	9,5	2	-	10,4	16500	150	1,0	-	10	TR	25						
19	3/7	1565	1,20	50	19,5	12	15	9/32	11,5	2	-	10,5	16000	150	1,5	-	9	TR	25						
20	4/7	1055	1,20	48	17	9	16	8/22	11,0	2	-	9,8	16500	180	0,35	-	10	TR	27,5						Opening 12-1/4" hole to 17½".
21	5/7	1448	1,20	44	16	9	14	5/18	12	2	-	9,8	17000	160	0,25	-	9	TR	27,5						
22	6/7	1565	1,20	40	13	8	10	4/16	11,0	2	-	9,5	18500	400	0,2	-	9	TR	27,5						
23	7/7	1565	1,20	55	17,5	9	17	15/58	12,0	2	-	10,1	18500	400	0,3	-	9	TR	27,5						Contamin. mud in return
24	8/7	1565	1,20	48	17,5	10	15	23/35	12,0	2	-	10,2	16000	160	0,5	-	10	TR	25						Adding Drispac to rais YP and Gels.
25	9/7	1565	1,20	45	18,5	13	11	7/30	6,8	1	-	10,6	13000	160	0,3	-	10	TR	22,5						
26	10/7	1699	1,20	44	17,5	12	11	5/30	6,0	1	-	10,5	16000	200	0,4	-	10	TR	22,5						
27	11/7	1699	1,20	45	17,5	12	11	5/27	5,5	1	-	10,4	16000	200	0,4	-	9	TR	22,5						
28	12/7	1699	1,20	55	30	21	18	3/32	6	1	-	10,5	16000	240	0,3	-	9	TR	22,5						

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

MUD SYSTEM Bentonit/Ligno/Seawater

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

ENGINEERS S.Bjørheim/R.Bennett/Torsvoll/Alison

Day No.	DATE 1980	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES																							OPERATION REMARKS
			DENSITY PPG ☐ SG ☒	VISCOSITY sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm	Ca. ++ ppm	Pf	RETORT % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"			
29	13/7	1699	1,20	55	30	21	18	3/32	6	1	-	10,5	16000	240	0,3	-	9	TR	22,5							STRIKE
30	14/7	1699	1,20	55	30	21	12	3/32	6	1	-	10,5	16000	240	0,3	-	9	TR	22,5							STRIKE
31	15/7	1699	1,21	56	19	13	12	6/38	6,5	2	-	10,0	16000	160	0,3	-	9	TR	25							Strike over. Mix 400 bbl new mud.
32	16/8	1699	1,20	50	19,5	14	11	7/34	6,6	2	-	11	14000	200	0,7	-	8	TR	22,5							Drispl. riser. Cmt.cont mud on btm. up.
33	17/8	1752	1,20	45	18	12	12	5/36	7,2	2	-	11	14500	300	0,8	-	8	TR	22,5							
34	18/8	1869	1,20	46	18	13	10	3/28	6,8	2	-	10	14500	280	0,25	-	8	TR	24							
35	19/8	1956	1,20	45	17,5	12	11	4/28	7,7	2	-	10,7	15000	240	0,3	-	8	TR	22,5							
36	20/8	2060	0,20	46	17,5	12	11	3/30	7,2	2	-	10,4	14000	200	0,3	-	9	TR	25							
37	21/8	2130	1,20	46	17	12	10	3/25	7,4	2	-	10,4	14500	160	0,2	-	9	TR	25							
38	22/8	2201	1,20	47	17,5	12	11	4/27	7,4	2	-	10,4	14000	160	0,25	-	9	TR	25							
39	23/8	2268	1,20	47	17	12	10	3/20	6,0	1	-	10,4	17000	120	0,3	-	10	TR	25							
40	24/8	2296	1,20	48	16,5	11	11	4/25	5,7	1	-	10,1	17000	160	0,3	-	10	TR	25							
41	25/8	2361	1,20	47	17	12	10	3/18	5,5	1	-	10,3	18000	120	0,4	-	10	TR	22,5							
42	26/8	2450	1,20	47	17	12	10	3/24	5,7	1	-	10,6	19000	100	0,6	-	11	TR	22,5							

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

MUD SYSTEM Bent/Ligno/Seawater

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

ENGINEERS S.Bjørheim/M.Alison/Jensen/Lund

Day No.	DATE 1980	DEPTH FEET □ METERS ☒	MUD PROPERTIES																							OPERATION REMARKS
			DENSITY PPG □ SG ☒	VISCOSITY sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm	Ca. ++ ppm	Pf	RETORT % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"			
43	27/8	2497	1,20	46	17	12	10	3/20	5,9	1	-	10,3	2000	100	0,6	-	11	TR	22,5							
44	28/8	2516	1,20	47	16,5	11	11	3/21	5,5	1	-	10,2	2000	100	0,5	-	11	TR	22,5							Logging
45	29/8	2516	1,20	47	17	12	10	3/23	5,7	1	-	10,3	2000	100	0,4	-	11	TR	22,5							
46	30/8	2516	1,20	51	15	10	10	5/25	5,3	1	-	10,2	19500	100	0,6	-	10	TR	21							
47	31/8	2516	1,20	47	15	11	8	3/17	5,4	1	-	10,2	19500	100	0,55	-	10	TR	22							Run & cmt. 9-5/8 csg.
48	1/9	2516	1,20	48	14	10	8	3/15	5,6	1	16	10,0	19500	100	0,4	-	10	TR	21							
49	2/9	2523	1,20	58	12,5	13	13	5/30	5,7	1	14	11,5	19500	100	1,3	-	11	TR	22							
50	3/9	2598	1,32	50	21,5	16	11	3/12	5,8	1	15	10,2	18500	140	0,55	-	13	TR	22							
51	4/9	2643	1,32	52	20,5	15	11	4/14	5,8	1	15,4	10,2	18000	120	0,70	-	13	TR	21							
52	5/9	2654	1,32	48	20	15	10	3/12	5,7	1	15,6	10,7	18500	120	0,80	-	13	TR	21							
53	6/9	2665	1,32	48	20,5	15	11	3/12	5,5	1	14,6	10,8	18000	140	1,0	-	12½	TR	21							Junk in hole
54	7/9	2667	1,32	50	19,5	14	11	4/13	5,0	1	13,8	10,2	18000	140	0,85	-	12½	TR	21							
55	8/9	2675	1,32	53	20,5	15	11	3/11	4,8	1	13,6	10,4	17500	140	0,95	-	12½	TR	21							
56	9/9		1,32	57	19,5	15	9	3/10	4,6	1	13,4	10,4	17500	120	1,1	-	12½	TR	20							High funnel visc. due to low surface temp.

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Lignite/Seawater

ENGINEERS B.Jensen/A.Lund/Bjørheim/Jack

Day No.	DATE 1980	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES																							OPERATION REMARKS
			DENSITY PPG ☐ SG ☒	VISCOSITY sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm	Ca. ++ ppm	Pf	RETORT % OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"			
57	10/9	2680	1,32	55	19,5	15	9	3/13	4,8	1	14,0	10,3	17500	120	1,0	-	12½	TR	20							
58	11/9	2691	1,32	54	21	16	10	3/11	5,0	1	14,0	10,8	17500	120	1,1	-	12½	TR	20							
59	12/9	2703	1,32	53	21	16	10	3/11	5,0	1	13,8	10,4	17500	120	0,7	-	12½	TR	20							
60	13/9	2715	1,32	57	20,5	16	9	3/12	5,2	2	14,6	10,5	17000	100	0,65	-	14	TR	20							
61	14/9	2729	1,32	58	22,5	18	9	2/12	5,2	2	15,4	10,4	17000	140	0,75	-	14	TR	21,5							
62	15/9	2752	1,32	58	22	18	9	2/13	4,4	1	13,0	10,3	17000	140	0,5	-	15	TR	21,5							
63	16/9	2770	1,32	58	22	17	10	3/12	4,9	1	12,8	10,2	17000	120	0,5	-	15	TR	20,5							
64	17/9	2790	1,32	59	22	15	10	3/12	4,6	1	12,6	10,2	16500	140	0,7	-	15	TR	22,5							
65	18/9	2790	1,32	62	20,5	16	9	3/12	4,7	1	12,6	10,1	16500	120	0,5	-	15	TR	21,5							
66	19/9	2807	1,30	57	21	17	9	3/13	5,0	1	12,2	10,3	16500	120	0,82	-	14	TR	21,5							Reduced mudwt. to 1,30 sg.
67	20/9	2816	1,30	58	21	17	9	3/14	5,0	1	12,1	10,1	16500	130	0,5	-	14	TR	20,5							
68	21/9	2846	1,30	60	19	15	9	3/11	4,8	1	12,4	10,4	16500	130	0,8	-	12	TR	20							
69	22/9	2888	1,28	55	18,5	14	9	3/12	5,1	1	12,3	10,4	16500	140	0,75	-	12	TR	22,5							Reduced medwt. to 1,28 sg.
70	23/9	2907	1,28	57	20	15	10	3/13	4,9	1	12,0	10,4	16000	120	0,7	-	12	TR	22,5							

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

ENGINEERS Bjørheim/Jack

MUD SYSTEM ~~Bent/Ligno/Lignite/Seawater~~

Day No.	DATE	DEPTH FEET ☐ METERS ☒	MUD PROPERTIES																						OPERATION REMARKS
				VISCOSITY				GELS							Filtrate Analysis			RETORT							
			DENSITY PPG ☐ SG ☒	sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	0 / 10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Cl⁻ ppm	Ca. ++ ppm	Pf	% OIL	% SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	
	1980																								
71	24/9	2.925	1,28	56	19	15	8	3 / 11	5,0	1	12,1	10,5	16000	140	0,78	-	12	TR	21,5						
72	25/9	2.962	1,28	56	20,5	16	9	3 / 13	5,0	1	13,2	10,4	16500	120	0,7	-	12	TR	20						
73	26/9	3.002	1,28	57	21	16	10	2 / 14	4,5	1	12,8	10,2	16500	120	0,7	-	12	TR	22,5						
74	27/9	3.004	1,28	59	21	16	10	3 / 11	4,5	1		10,8	16500	120	0,7	-	11	TR	22						
75	28/9	3.008	1.28	59	19	15	8	3 / 11	4,3	1	11,8	10,1	16500	120	0,7	-	11	TR	22						
76	29/9	3.028	1,28	57	19	14	10	3 / 8	4,4	1	12,0	10,6	16500	120	0,7	-	11	TR	22						
77	30/9	3.054	1,29	53	18	13	10	3 / 9	4,1	1	12,0	10,2	16500	120	0,9	-	11	TR	22						
78	1/10	3.088	1,28	51	18,5	14	9	3 / 9	4,1	1	11,8	10,2	16500	120	0,9	-	11	TR	22						
79	2/10	3.088	1,28	52	19	14	10	3 / 9	4,4	1	12,0	10,3	17000	120	0,9	-	11	TR	21						
80	3/10	3.088	1,28	52	19	14	10	3 / 8	4,4	1	12,1	10,4	17000	120	0,9	-	11	TR	21						
81	4/10	3.088	1,28	58	19	14	10	3 / 10	4,5	1	12,5	10,3	17000	120	0,9	-	11	TR	21						
82	5/10	3.088	1,28	50	17,5	15	7	3 / 9	4,8	1	12,5	11,1	17000	180	1,1	-	11	TR	21						CMT CONT.
83	6/10	3.088	1,28	50	18	14	8	3 / 8	4,5	1	12,3	11,0	17000	240	0,9	-	11	TR	21						- " -
84	7/10	3.088	1,28	53	18	14	8	3 / 9	4,5	1	12,0	10,9	17000	240	0,8	-	11	TR	21						

REMARKS

ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

Drilling Mud Properties Record

MUD SYSTEM: Bent/Ligno/Lignite/Seawater

WELL NAME: 7119/12-1 AREA: TROMS I
OPERATOR: STATOIL RIG.: ROSS RIG
ENGINEERS: B.Jensen

Day No.	DATE	DEPTH FEET ☐ METERS ☒	DENSITY PPG ☐ SG ☒	VISCOSITY sec/qt	VISCOSITY A.V. cps	VISCOSITY P.V. cps	VISCOSITY Y.P. #/100 sq.ft.	GELS 0/10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis Cl⁻ ppm	Filtrate Analysis Ca.++ ppm	Filtrate Analysis Pf	RETORT % OIL	RETORT % SOLIDS	% SAND	BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	"N"	"K"	OPERATION REMARKS
85	8/10	3.088	1.28	53	18	14	8	3/9	4,5	1	12,1	10,9	17000	240	0,9	-	11	TR	21					
86	9/10	3.088	1.28	52	19,5	15	9	3/10	4,4	1	-	10,8	17000	180	0,9	-	11	TR	21					
87	10/10	3.088	1,28	52	19,5	15	9	3/9	4,4	1	-	10,9	17000	180	0,8	-	11	TR	21					

REMARKS

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Pr.Hyd.Bent/Seawater ENGINEERS LUND / JENSEN

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE	MATERIALS ADDED TO CONTROL PROPERTIES: THINNERS: CHR. LIGNO				POLYMERS: CMC L/H	Drispac s.l.				OTHERS: CAUSTIC	SODA ASH	CaCl2	Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M		
1	15/6	129	-	284		9	20										15	6								
2	16/6	315	-	350		48	20										25	5								
3	17/6	159	-	159	3	8											10	2								
4	18/6	83	-	73		4	53										3	1								
5	19/6	1.207	-	1.370	28		295										13	10								
6	20/6	1.220	-	610	21		187										9	3	5							
7	21/6	-	-	628		9	5										7	4								
8	22/6	-	570	1.052	23	12		9									14	4		2		12				
9	23/6	-	370	283		2		2									1					1				
10	24/6	-	811	1.100	47	4	66											2		1		11	1			
11	25/6	1.274	-	127	14																					
12	26/6	800	-	1.200	43		415	22									19	7								
13	27/6	-	-	50	6		45	17									16									
14	28/6	-	53	150	2			36										6			5	4				
FORWARD																										
ESTIMATED TOTALS		5.187	1.804	7.436	187	96	1.106	86									132	50	5	3	5	28	1			

REMARKS:

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7112/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Pr.Hyd.Bent/Shr.Ligno/Seawater

ENGINEERS Jensen/Wiik/Bjørheim

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: M/T BARITE	M/T BENTONITE	SACK MATERIALS: BENTONITE	MATERIALS ADDED TO CONTROL PROPERTIES — THINNERS: CHR. LIGNO			POLYMERS: CMC L/H	Drispac s.l.				OTHERS: CAUSTIC	SODA ASH	CaCl2	Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M		
15	29/6	-	958	1.768			190	58									20	2			16			/30		
16	30/6	-	1.303	1.204			60	37			17/7						39	4		2	13	11		12/0		
17	1/7		553	545	66		64	22			-/31						20				7					
18	2/7	-	642	789	15		97	59			2/1						41			2						
19	3/7	-	118	132				8									8									
20	4/7		137	312	4			28									17			1						
21	5/7		506	713				50			9/-						39									
22	6/7		532	646				37			22/-						27									
23	7/7		1.314																							
24	8/7		655		26		20										2	1								
25	9/7		125	205	7		25	5			5/3	10					7	3			1					
26	10/7		15	612	9		30	43			48/-						8	2			3					
FORWARD		5.187	1.804	7.436	187	96	1.106	86			0	0					132	50	5	3	5	28	1	0/0		
ESTIMATED TOTALS		5.187	8.662	14.362	314	96	1.592	433			103/39	10					360	62	5	8	45	39	1	12/30		

REMARKS:

Day no 23 i Dumped while cementing and due to containinated mud.

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Seawater ENGINEERS S.Bjørheim/R.Bennett

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE		MATERIALS ADDED TO CONTROL PROPERTIES: THINNERS: CHR: LIGNO				POLYMERS: CMC L/H	Drispac s.l.				OTHERS: CAUSTIC	SODA ASH	CaCl2	Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M		
27	11/7			91									5														
28	12/7		81						5					4								4					
29	13/7																										
30	14/7																										
FORWARD		5187	8662	14362	314	96	1592		433				103/39	10				360	62	5	8	45	39	1	12/30		
ESTIMATED TOTALS		5187	8743	14453	314	96	1592		438				108/39	14				360	62	5	8	49	39	1	12/30		

REMARKS:

RIG ON STRIKE

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Seawater ENGINEERS Torsvoll/Bjørheim/Alison

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE	THINNERS: CHR. LIGNO			POLYMERS: CMC L/H	Drispac s.l.				OTHERS: CAUSTIC	SODA ASH	CaCl2	Al. Stearate	Sod. Bicarb	AMCO DETERGENT	SURFLO 300	NUT PLUG F/M		
31	15/8		80	180			110	2			3/-					7									
32	16/8		35	72	17		17	29			9/1					6				1					
33	17/8		167	160	7		44	40			22/0								1	5					
34	18/8		139	350	5		66	37			16/-					2	4			2					
35	19/8		45	238			30	39			11/-					1	1			1					
36	20/8		143	210	5		82	41			21/-					17	1								
37	21/8		148	180	7		59	38			12/-					19	2								
38	22/8		95	197			33	27			13/-					11	1								
39	23/8		66	137	4			32			27/-					10	3								
40	24/8		213	25				21			10/-					6									
41	25/8		24	80				39			20/-					19									
42	26/8		93	147				40			22/-					25	1								
FORWARD		5187	8743	14453	314	96	1.592	438			108/39	14				360	62	5	8	49	39	1	12/30		
ESTIMATED TOTALS		5187 ~	9991	16429	359	96	2.038	823			294/40	14				483	75	5	9	58	39	1	12/30		

REMARKS:

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Seawater/Lignite ENGINEERS S.Bjørheim/M.Alison/B.Jensen/A.Lund

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE MT	BENTONITE MT	SACK MATERIALS: BENTONITE	MATERIALS ADDED TO CONTROL PROPERTIES — THINNERS: CHR. LIGNO	LIGNITE	POLYMERS: CMC L/H	Drispac s.l.	CAUSTIC	OTHERS: SODA ASH	$CaCl_2$	Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M
43	27/8		160	187			39	5				14/-						13							
44	28/8		83	120			26					20/-						6							
45	29/8		-	-				10				2						2							
46	30/8			30				17				5						6							
47	31/8	280	262	100			25											1	1						
48	1/9	-	-	-			10											3				3			
49	2/9		325	200			37	5				9/						1	1			4			
50	3/9		270	50	58		28	36	26			19/2						12							
51	4/9		20	131	11		45	19	13			7/						1	1						
52	5/9		150	74	18			23	24			10/						6							
53	6/9		10	60				4	7			5/						6			1				
54	7/9		33	25	2			10	9			4/						4							
55	8/9		35	100	9		33	18	12			4/						5	1						
56	9/9		35		6			6				1													
FORWARD		5187	9991	16429	359	96	2.033	823				294/40	14					483	75	5	9	58	39	1	12/30
ESTIMATED TOTALS		5467	11374	17506	463	96	2.276	976	91			394/42	14					549	79	5	10	65	39	1	12/30

REMARKS:

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

MUD SYSTEM Bent/Ligno/Lignite/Seawater

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

ENGINEERS B.Jensen/H.Lund/Bjørheim/Jack

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE	THINNERS: CHR. LIGNO	LIGNITE	POLYMERS: CMC	L/H	Drispac s.l.	MATERIALS ADDED TO CONTROL PROPERTIES: CAUSTIC	SODA ASH	CaCl2	OTHERS: Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M
57	10/9		22		2		7	5												
58	11/9		25	110	8		34	28		6			6							
59	12/9		107	100	14		40	22					2	1						
60	13/9		10		4			8					4							
61	14/9		60	26	10		40	31	11	4			6	1						
62	15/9		73	90	7		15	31	17	12			11	1						
63	16/9		200	73			61	8		4			6	1						
64	17/9		96	80	16		52	30		10			10	1						
65	18/9		8					3		2										
66	19/9		48	100	3		25	11		6			11	1						
67	20/9		137	100	6		43	14		7			4							
68	21/9		80	115	7			16		14			10							
69	22/9		153	120	12		70	11		8			10	2						
70	23/9		45	40				14	8	16	2									
FORWARD		5467	11374	17506	463	96	2.276	976	91	394/42	14		549	79	5	10	65	39	1	12/30
ESTIMATED TOTALS		5467	12438	18460	552	96	2.663	1.208	127	483/42	16		629	87	5	10	65	39	1	12/30

REMARKS:

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Lignite/Seawater ENGINEERS Bjørheim/Jack/Jensen

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE	THINNERS: CHR. LIGNO	LIGNITE	POLYMERS: CMC	L/H	Drispac s.l.	CAUSTIC	SODA ASH	CaCl2	OTHERS: Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M
71	24/9		58	60	10			11		5			8							
72	25/9		100	108	4		57	5	13	11				2		2				
73	26/9		56	105	9		9	17		7			8							
74	27/9		30	100						1										
75	28/9		35	30	6		35	10					2							
76	29/9		35	9	3								4							
77	30/9		326	100			30		18				4	1						
78	1/10		70	20	3			11					3							
79	2/10												3							
80	3/10																			
81	4/10		35	42	3															
82	5/10		99	45				21					3	2		6				
83	6/10		31		3			16					9				15			
84	7/10			15																
FORWARD		5467	12438	18460	552	96	2.663	1.208	127	483/42	16		629	87	5	10	65	39	1	12/30
ESTIMATED TOTALS		5467	13312	19094	593	96	2.794	1.299	158	507/42	16		673	92	5	18	80	39	1	12/30

REMARKS:

ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 7119/12-1 AREA TROMS I

OPERATOR STATOIL RIG. ROSS RIG

MUD SYSTEM Bent/Ligno/Lignite/Seawater ENGINEERS B.Jensen

Day No.	DATE 1980	ESTIMATED DAILY MUD VOLUMES: LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BULK MATERIALS: BARITE M/T	BENTONITE M/T	SACK MATERIALS: BENTONITE	THINNERS: CHR. LIGNO	LIGNITE	POLYMERS: CMC	L/H	Drispac s.l.	CAUSTIC	SODA ASH	CaCl2	OTHERS: Al. Stearate	Sod. Bicarb	ANCO DETERGENT	SURFLO 300	NUT PLUG F/M
85	8/10	340	80																	
86	9/10																			
87	10/10		731																	
FORWARD		5467	13313	19094	593	96	2794	1299	158	507/42	16		673	92		18	80	39	1	12/30
ESTIMATED TOTALS		5807	14124	19094	593	96	2794	1299	158	507/42	16		673	92	5	18	80	39	1	12/30

REMARKS:

Summary of RFT-runs

The first RFT-run was done at the intermediate logging operation at 2790 m RKB as T.D. 6 pretest pressure-points were obtain out of 14 attempts, and a pressure gradient was obtained (fig. 1). A segretated sampling was attempted at 2659 m RKB. The 2 3/4 gallon chamber was sealed after more than 1 hour setting time without any build-up. The 1 gallon chamber was then opened and formation pressure was reached after 18 minutes setting time. The chamber was sealed off and sent onshore for anlysis. The laboratory analysis conclusion was mud filtrate with a film of hydrocarbons on top.

The 2 3/4 gallon chamber was bled off offshore with zero surface pressure containing 1.5 gallon mud filtrate.

Run no. 2 to 6 were done as a part of the final complete logging program at T.D.at 3088 m RKB. Run no. 2 included 69 pretest pressure-point attempts and a segregated sample attempt at 2721 m RKB. Due to very tight formations only 9 pretest pressure-points were obtained, most of them at same depths as the pressure-points from run no. 1. (fig. 2). The problems with tight formation increased with depth. Also, the very tight formation or fracture in the formation rather than mudcake caused bad sealing of the probe occasionally. The pressure points obtained confirmed the pressure gradient obtained in run no. 1. (fig. 1. and 2.). Due to a valve failure the 2 3/4 gallon chamber was skipped on this run. The 1 gallon chamber was filled successfully in 9 minutes.

Run no. 3 to 6 were segregated sample runs at different depths, see RFT-sampling data listings.

All the sample chambers were bled off offshore, all with a surface pressure of zero. Offshore analysis resulted in mud filtrate samples with no or few traces of hydrocarbons. One litre of all the samples were bottled and shipped for further onshore laboratory analysis.

PRETEST RECORDED DATA

WELL: 7119/12-1

DATE: 17.9.80

RUN NO.: 1

Max. rec. temp.: 195°F

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
1	2592	4866/4864	4892/1.327	0	-	Tight	-	4890/1.327	
2	2659	4991/4988	5017/1.327	2707	19.5	4286	4310/1.140	5014/1.326	
3	2666	5002/5004	5029/1.327	0	-	Tight	-	5031/1.327	
4	2682.5	5032/5030	5059/1.326	3753	19.5	4329	4353/1.141	5057/1.326	
5	2698	5061/5061	5088/1.326	0	-	Tight	-	5088/1.326	
6	2700.5	5067/5070	5094/1.327	0	-	Tight	-	5097/1.327	
7	2706.5	5078/5076	5105/1.326	0	22	4354	4378/1.138	5103/1.326	
8	2722	5105/5104	5132/1.326	3547	19	4375	4399/1.136	5131/1.326	
9	2748	5155/5156	5182/1.326	0	-	Tight	-	5183/1.326	
10	2747	5154/5153	5181/1.326	0	-	Tight	-	5180/1.326	
11	2756.5	5169/5168	5196/1.326	0	-	Tight	-	5195/1.325	
12	2765	5182/5184	5109/1.325	3105	20.5	4425	4449/1.132	5211/1.325	
13	2778	5209/5207	5236/1.325	3209	21	4444	4468/1.131	5234/1.325	
14	2783	5215/5214	5242/1.325	0	-	Tight	-	5241/1.324	

PRETEST RECORDED DATA

WELL: 7119/12-1

DATE: 2.10.80

RUN NO.: 2

Max. rec. temp.: 230°F

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
1	2659.1	4864/4861	4903/1.297	1082	19	4279	4317/1.142	4900/1.296	
2	2671.0	4889/4886	4928/1.297	-	-	Tight	-	4925/1.297	
3	2693.0	4928/4925	4967/1.297	-	-	Tight	-	4964/1.296	
4	2697.0	4936/4936	4975/1.297	-	-	Tight	-	4975/1.297	
5	2659.0	4863/4872	4902/1.296	3377	20	4280	4318/1.142	4911/1.299	Tool che
6	2698.0	4941/4940	4980/1.298	-	-	Tight	-	4981/1.298	
7	2707.0	4956/4956	4995/1.298	50	22.5	4360	4398/1.143	4995/1.298	
8	2659.0	4866/	4905/1.297			4284	4322/1.143		Tool che
9	2707.3	4956/4956	4995/1.297	-	-	Tight	-	4995/1.297	
10	2706.0	4951/4951	4990/1.297	3602	18	4352	4390/1.141	4990/1.297	
11	2721.0	4983/4976	5022/1.298	63	145	4373	4411/1.140	5015/1.296	Samplin
12	2723.5	4983/4981	5022/1.297	2543	19	4375	4413/1.139	5023/1.297	
13	2758.0	5049/5049	5088/1.297	-	-	Tight	-	5088/1.297	
14	2764.5	5062/5062	5101/1.298	1900	21	4428	4466/1.136	5101/1.298	
15	2768.5	5071/5069	5110/1.298	40	21.5	4434	4472/1.136	5108/1.297	
16	2780.0	5094/5090	5133/1.298	298	22	4449	4487/1.135	5129/1.297	
17	2794.5	5120/5117	5159/1.298	-	-	Tight	-	5156/1.298	
18	2798.0	5123/5122	5162/1.297	-	-	Tight	-	5161/1.297	
19	2802.0	5130/5129	5169/1.297	-	-	Tight	-	5168/1.297	
20	2813.5	5155/5152	5194/1.298	-	-	Tight	-	5191/1.297	

PRETEST RECORDED DATA

WELL: 7119/12-1

DATE: 2.10.80

RUN NO.: 2 continued

Max. rec. temp.: 230°F

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
21	2824.0	5175/5173	5214/1.298	-	-	Tight	-	5212/1.298	
22	2828.5	5180/5179	5219/1.298	-	-	Tight	-	5218/1.297	
23	2835.5	5193/5192	5232/1.298	-	-	Tight	-	5231/1.297	
24	2780.0	5089/5091	5128/1.297	42	24	4451	4489/1.136	5130/1.298	Tool chec
25	2842.5	5204/5202	5243/1.297	-	-	Tight	-	5241/1.297	
26	2842.5	5202/5202	5241/1.297	-	-	Tight	-	5241/1.297	Logic clea
27	2861.0	5240/5239	5279/1.298	-	-	Tight	-	5278/1.297	
28	2864.5	5244/5234	5283/1.297		45 min	4910 ??	super charge	5273/1.295	Logicclea
29	2865.0	5237/5237	5277/1.295	-	-	Tight	-	5277/1.295	
30	2877.0	5270/5269	5310/1.298	-	-	Tight	-	5309/1.298	
31	2879.5	5272/5271	5312/1.297	-	-	Tight	-	5311/1.297	
32	2889.3	5295/5293	5335/1.299	-	-	Tight	-	5333/1.298	
33	2896.0	5308/5306	5348/1.299	-	-	Tight	-	5346/1.298	
34	2899.0	5310/5309	5350/1.298	-	-	Tight	-	5349/1.298	
35	2907.0	5330/5328	5370/1.299	-	-	Tight	-	5368/1.299	
36	2918.5	5351/5346	5391/1.299	-	-	Tight	-	5386/1.298	
37	2922.5	5351/5347	5391/1.297	-	-	Tight	-	5387/1.296	
38	2780.0	5089/5092	5128/1.297	-	-	4450	4488/1.135	5131/1.298	Tool chec
39	2929.5	5362/5361	5402/1.297	-	-	Tight	-	5401/1.297	
40	2942.0	5385/5382	5425/1.297	-	-	Tight	-	5422/1.296	

RETEST RECORDED DATA

WELL: 7119/12-1

DATE: 2.10.80

Max. rec. temp.: 230°F

RUN NO.: 2 continued

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
41	2956.5	5410	5450/1.296	-	-	Seal failure	-		
	2956.6	5406		-	-	Tight	-	5446/1.295	
42	2965.	5412/5423	5463/1.296	-	-	Tight	-	5463/1.296	
43	2974.5	5445/5443	5485/1.297	-	-	Tight	-	5483/1.296	
44	2985.0	5462/5461	5502/1.296	-	-	Tight	-	5501/1.296	
45	2991.0	5475	5515/1.297	-	-	Seal failure	-		
	2991.0	5470		-	-	Tight	-	5510/1.295	
46	3000.0	5490	5530/1.296	-	-	Seal failure	-		
	3000.0	5489		-	-	Tight	-	5529/1.296	
47	2780.0			-	-	4450	4488/1.135		Tool check
48	3008.0	5504	5544/1.296	-	-	No seal	-		
49	3013.5	5510/5505	5550/1.295	-	-	Tight	-	5545/1.294	
50	3017.0	5514	5554/1.295	-	-	Seal failure	-		
	3017.0	5515		-	-	Tight	-	5555/1.295	
51	3024.5	5536/5533	5576/1.296	-	-	No seal	-	5573/1.296	Twice
52	3047.5	5576	5616/1.296	-	-	No seal	-		
	3047.5	5566		-	-	Tight	-	5606/1.294	
53	3042.0	5552/5555	5592/1.293	-	-	Tight	-	5595/1.293	
54	3038.0	5545/5550	5585/1.293	-	-	No seal	-	5590/1.294	
55	3042.0	5560/5554	5600/1.295	-	-	Tight	-	5594/1.293	Logic clear

PRETEST RECORDED DATA

WELL: 7119/12-1

DATE: 2.10.80

RUN NO.: 2 continued

Max. rec. temp.: 230°F

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
56	3029.0	5524/5538	5564/1.292	-	-	Tight	-	5578/1.295	
57	3034.0	5549/5548	5589/1.295	-	-	No seal	-	5588/1.295	Set twic
58	3053.0	5591/5586	5631/1.297	-	-	Tight	-	5626/1.296	
59	3057.0	5593/5588	5633/1.296	-	-	No seal	-	5628/1.295	Settwice
60	3064.5	5604/5603	5644/1.295	-	-	No seal	-	5643/1.295	
61	3074.5	5626/5620	5666/1.296	-	-	Tight	-	56601/1.295	
62	3079.0	5628/5627	5668/1.295	-	-	No seal	-	5667/1.294	
63	3084.0	5638/5636	5678/1.295	-	-	No seal	-	5676/1.294	
64	2985.5	5460/5461	5500/1.296	-	-	Tight	-	5501/1.296	
65	2783.5	5097/5097	5136/1.298	-	-	Tight	-	5136/1.298	
66	2749.5	5034/	5083/1.300	-	-	No seal	-		Twice
67	2658.5	4866/4874	4905/1.297	0	84	4284	4322/1.143	4913/1.300	
68	2641.5	4839/4845	4878/1.299	-	-	Tight	-	4884/1.300	
69	2612.0	4789/4789	4828/1.300	-	-	Tight	-	4828/1.300	
70	2721.0	4980/4960	5019/1.297	4308	18	4371	4409/1.139	4999/1.292	Samplin
71	2764.0	5051/5038	5090/1.295	2835	19	4423	4461/1.135	5077/1.292	Samplin
72	2775.5	5069/	5108/1.294	1911	20	4440	4478/1.135		Samplin
73	2706.3	4954/4943	4993/1.297	2245	20	4351	4389/1.140	4981/1.294	Samplin
	2764.5	5055/	5094/1.296	1810	21	4422	4460/1.135		Pretest before samplin
	2765.0	5056/	5095/1.296	2256	19	4425	4463/1.135		"
	2780.0	5086/	5125/1.206	933	19	4446	4484/1.134		

PRETEST RECORDED DATA

WELL: 7112/12-1

DATE: 2.10.80

RUN NO.: 2 continued

Max. rec. temp.: 230°F

Test	Depth	Log hydr.pr. before/after test	Cor. hydr.pr. before test	Draw down	Fill up time	Log pretest pressure	Cor.pretest pressure	Cor.hydr.pr. after test	Remarks
No	mRKB	psi	psi, gm/cc	psi	sec.	psi	psi/gm/cc	psi, gm/cc	
	2779.5	5082/	5121/ 1.296	870	20	4443	4481/1.134		Pretest
	2779.0	5082/	5121/ 1.296	803	20	4444	4482/1.134		before
	2706.0	4955/4954	4994/ 1.298	120	33	4352	4390/1.141	4994/1.298	samplin
									"

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CONTINENTAL SHELF INSTITUTE

REPORT TITLE

SOURCE ROCK ANALYSES OF WELL 7119/12-1

CLIENT

STATOIL

CLIENT's REF.:	REPORT NO.:
Arvid Elvsborg	0-269/1/80

AUTHOR (S):	DATE:	PROJECT NO.:
M. Bjorøy, T.M. Rønningsland, J.O. Vigran, L. Husvik	1.12.80	
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DEPARTMENT: Organic Geochemistry	RESPONSIBLE SCIENTIST: M. Bjorøy	

SUMMARY:

See next page

KEY WORDS

Source rock

SUMMARY:

The analysed sequence, 410-3088 m was divided into fourteen zones, which is given the following source rock rating:

Zone A, 410-580 m: Immature, fair potential as a source rock for hydrocarbons.

Zone B, 580-690 m: Immature, good potential as a source rock for gas and oil.

Zone C, 690-1010 m: Immature, fair potential as a source rock for gas and oil. Indications of free HC.

Zone D, 1010-1440 m: Immature.
1010-1300 m: Fair potential as a source rock for gas and oil.
1300-1440 m: Fair/good potential as a source rock for oil and gas.

Zone E, 1440-1565 m: Immature, fair potential as a source rock for gas and oil.

Zone F, 1565-2271 m: Moderate mature to mature, good potential as a source rock for gas and oil. Indications of free HC.

Zone G, 2271-2331 m: Mature, rich potential as a source rock for gas and oil.

Zone H, 2331-2481 m: As zone G. Indications of free HC.

Zone I, 2481-2720 m: Oil window maturity. The claystone has a rich potential as a source rock for gas. Indications of free HC.

Zone J, 2720-2775 m: No samples available.

Zone K, 2775-2845 m: Oil window maturity. The claystone has a rich potential as a source rock for gas and oil.

Zone L, 2845-2968 m: Oil window maturity. The claystone in the upper part has a rich potential as a source rock for oil and gas changing to a rich potential for gas in the lower part.

Zone M, 2968-3010 m: No samples available.

Zone N, 3010-3088 m: Oil window maturity. The claystone has a rich potential as a source rock for oil and gas.

EXPERIMENTAL AND DESCRIPTION OF INTERPRETATION LEVELS

Headspace gas analyses.

One ml. of the headspace gas from each of the cans was analysed gas chromatographically for light hydrocarbons. The results are shown in Table Ia. The canned samples were washed with temperated water on 4, 2, 1 and 0.125 mm sieves to remove drilling mud and thereafter dried at 35°C.

Occluded gas.

An aliquote of the 1-2 mm fraction of each sample before drying was crushed in water using an airtight ball mill, and one ml of the headspace analysed gas chromatographically. The results are shown in Table Ib.

Total Organic Carbon (TOC)

Picked cuttings of the various lithologies in each sample were crushed in a centrifugal mill. Aliquotes of the samples where then weighed into Leco cruisibles and treated with hot 2N HCl to remove carbonate and washed twice with destilled water to remove traces of HCl. The cruisibles were then placed in a vacuum oven at 50°C and evacuated to 20 mm Hg for 12 hrs. The samples were then analysed on a Leco E C 12 carbon determinator, to determine the total organic carbon (TOC).

Extractable Organic Matter (EOM)

From the TOC results samples were selected for extraction. Of the selected samples, approximately 100 gm of each was extracted in a flow through system (Radke et al., 1978 (Anal. chem. 49, 663-655) for 10 min. using dichloromethane (DCM) as solvent. The DCM used as solvent was destilled in an all glass apparatus to remove contaminants.

Activated copper filings were used to remove any free sulphur from the samples.

After extraction, the solvent was removed on a Buchi Rotavapor and transferred to a 50 ml flask. The rest of the solvent was then removed and the amount of extractable organic matter (EOM) determined.

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Processing of samples and Evaluation of Visual Kerogen

Crushed rock samples were treated with hydrochloric and hydrofluoric acids to remove the minerals. A series of microscopic slides contain strew mounts of the residue:

T-slide represents the total acid insoluble residue.
N-slide represents a screened residue (15 m meshes).
O-slide contains palynodebris remaining after flotation ($Zn\ Br_2$) to remove disturbing heavy minerals.
X-slides contain oxidized residues, (oxidizing may be required due to sapropel which embeds palynomorphs, or too high coalification preventing the identification of the various groups).

T and/or O slides are necessary to evaluate kerogen composition/palynofacies which is closely related to sample lithology.

Screened or oxidized residues are normally required to concentrate the larger fragments, and to study palynomorphs (pollen, spores and dinoflagellates) and cuticles for paleodating and colour evaluation.

So far visual evaluations of kerogen have been undertaken from residues mounted in glycerine jelly, and studied by Leitz Dialux in normal light (halogene) using x10 and x63 objectives. By x63 magnification it is possible to distinguish single particles of diameters about 2 and, if wanted, to make a more refined classification of the screened residues (particles >15 m).

The colour evaluation is based on colour tones of spores and pollen (preferably) with support from other types of kerogen (woody material, cuticles and sapropel). These colours are dependant upon the maturity, but also are under influence of the paleo-environment (lithology of the rock, oxidation and decay processes). The colours and the estimated colour index of an individual sample may therefore deviate from those of the neighbouring samples. The techniques in visual kerogen studies are adopted from Staplin (1969) and Burgess (1974).

In interpretation of the maturity from the estimated colour indices we follow a general scheme that is calibrated against vitrinite reflectance values (R_o).

R_o	0.45	0.6	0.9	1.0	1.3	
Colour index	2-	2	2+	3-	3	3+
Maturity intervals	Moderate mature	Mature (oil window)			Condensate window	

Rock-Eval Pyrolyses

100 mg crushed sample was put into a platinum cruisible whose bottom and cover are made of sintered steel and analysed on a Rock-Eval pyrolyser.

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RESULTS AND DISCUSSION

Light Hydrocarbon Measurements.

Based on the light hydrocarbon measurements the analysed sequence of the well, 410 - 3088, m was divided into fourteen zones:

A: 410 - 580 m.
B: 580 - 690 m.
C: 690 - 1010 m.
D: 1010 - 1440 m.
E: 1440 - 1565 m.
F: 1565 - 2271 m.
G: 2271 - 2331 m.
H: 2331 - 2481 m.
I: 2481 - 2720 m.
J: 2720 - 2775 m.
K: 2775 - 2845 m.
L: 2845 - 2968 m.
M: 2968 - 3010 m.
N: 3010 - 3088 m.

Zones I - O are mainly separated out due to lack of samples in certain intervals, and there are indications that these zones should be regarded as one zone.

Zone A, 410 - 580 m: This zone consists mainly of claystone. The amount of light hydrocarbons are very variable in this zone. The wetness of the gas is, however, low throughout the zone and the iso-butane/n-butane ($isoC_4/nC_4$) is high indicating low maturity.

Zone B, 580 - 690 m: The dominant lithology of this zone also is claystone. The zone is separated from zone A on the basis of a sharp increase in the wetness of the gas.

Zone C, 690 - 1010 m: Another zone with mainly claystone. The C_1 - C_4 hydrocarbons are quite uniform throughout the zone while there is some variation in the C_5+ hydrocarbon values.

Zone D, 1010 - 1440 m: This zone is separated from the one above due to the sharp increase in the $isoC_4/nC_4$ values. The other measurements are relatively constant throughout the zone.

Zone E, 1440 - 1565 m: The samples from this zone all had open lids, and the amount of cutting gas was too small to be measured.

Zone F, 1565 - 2271 m: This zone consists mainly of claystone with small amounts of limestone, mainly siderite/dolonite. The total amount of $C_1 - C_4$ hydrocarbons vary only a little from zone D, while the wetness of the gas increases gradually with increasing depth while the $isoC_4/nC_4$ decreases. The amount of C_5+ hydrocarbons is markedly higher in the middle part of the zone compared with zone D.

Zone G, 2271 - 2331 m: This zone consists of claystone and the amount of light hydrocarbons are markedly higher than in the zones above.

Zone H, 2331 - 2481 m: Another zone with claystone. The abundance of hydrocarbons, both $C_1 - C_4$ and C_5+ is markedly lower than in zone G, but very similar to the values in zone F. The wetness of the gas is high in these zones while the $isoC_4/nC_4$ ratio is low indicating mature samples.

Zone I, 2481 - 2720 m: Mainly claystone in the upper part, changing to sandstone at 2640 m. The abundance of C_5+ hydrocarbons increases sharply in this zone and stays relatively high for the rest of the well. The abundance of $C_1 - C_4$ hydrocarbons are particularly high in the 2515 - 2605 m region indicating migrated hydrocarbons in this part.

Zone J, 2720 - 2775 m: No samples available.

Zone K, 2775 - 2845 m: The two analysed samples indicate this zone to be similar to zone I.

Zone L, 2845 - 2968 m: This zone consists mainly of claystone down to 2900 m where it changes to mainly sandstone. The light hydrocarbon measurement indicates this zone to be similar to zone K and I.

Zone M, 2968 - 3010 m: No samples available.

Zone N, 3010 - 3088 m: Mainly sandstone with some claystone in parts. The abundance of the light hydrocarbons is high throughout this zone. The wetness of the gas drops for the last sample which contains a considerable amount of coal.

Total Organic Carbon.

Organic carbon was measured on picked cutting samples for most lithologies, except sandstone, in the various samples.

Zone A: The abundance of organic carbon in the claystone varies considerably in this zone, but a generally increases with increasing depth. Most of the zone has a fair abundance of organic carbon.

Zone B: Again a zone with variable abundance of organic carbon. Most of the zone has, however, a good abundance of organic carbon.

Zone C, D and E: The claystone in these zones shows a steady increase in the abundance of organic carbon with increasing depth. Down to approximately 1300 m the claystone has a fair abundance of organic carbon, while approximately 1300 - 1550 m has a fair/good abundance.

Zone F: The two uppermost samples in this zone have a poor abundance of organic carbon while the claystone in the remainder of the zone has a good abundance of organic carbon increasing to good/rich towards the lower part of the zone.

Zone G: A zone consisting of almost 100% dark grey claystone with a rich abundance of organic carbon.

Zone H: Another zone with almost 100% claystone. The abundance of organic carbon is, however, lower than in zone G. The whole zone has a good abundance of organic carbon.

Zone I: The abundance of organic carbon of the claystone in this zone varies considerably, but it is found to have a rich abundance for most of the samples. The samples contain a large percentage of sandstone towards the lower part, and the claystone in this part might be cavings.

Zone J: No samples available.

Zone K: The two samples in this zone are one with 100% claystone and one with almost 100% sandstone. The claystone has a rich abundance of organic carbon.

Zone L: Another zone with a large proportion of claystone in the upper part, changing to mainly sandstone for the lower 50 m's. The claystone has a rich abundance of organic carbon.

Zone M: No samples available.

Zone N: This zone consists mainly of sandstone with small amounts of claystone. The lowermost sample contains a good percentage of coal. The claystone in the samples has a very high abundance of organic carbon.

Extraction and Chromatographic Separation.

A number of claystone samples, selected on the basis of the screening analyses data, were extracted. In the following, results of the analyses of the samples from the various zones are discussed.

Zones A, B and C: None of the samples from these zones were extracted.

Zone D: Three claystone samples 1230, 1320 and 1420 m from this zone were extracted. The samples from 1230-55 and 1425-40 m have a poor abundance of extractable hydrocarbons while the sample from 1320-35 m has a good abundance of extractable hydrocarbons. Similar results are found when the extractable hydrocarbons are normalized to organic carbon. The composition of the hydrocarbons are, however, very different for the three samples. The sample from 1220-50 m has a higher proportion of aromatics than saturates while this is reversed for the two other samples which have approximately twice the amount of saturates compared to the aromatics. The gas chromatograms of the saturated hydrocarbons are also very different for the three samples. The sample from 1230-50 m has a pristane/nC_{17} rate almost equal to 1.0 and a high CPI value together with very pronounced high molecular weight n-alkanes indicating an input of immature terrestrial kerogen. The two other samples have unimodal n-alkane distribution and far lower pristane/nC_{17} ratio and CPI values, indicating the kerogen to be of amorphous origin.

Zone E: None of the samples from this zone were extracted.

Zone F: Nine samples from this zone were extracted, Table III-VII. All the samples, except those from 2076-91 m and 2256-71 m have a fair to good abundance of extractable hydrocarbons. The samples from 2076-91 m and 2256-71 m have a rich abundance of extractable hydrocarbons. Similar results are found for the organic carbon normalized values. The composition of the hydrocarbons varies slightly throughout this zone, but all the samples have a higher proportion of saturates than aromatics. The gas chromatograms of the saturated hydrocarbons varies for the different samples from this zone. The sample from 1625-40 m has a unimodal distribution with maximum at nC_{16}. The pristane/nC_{17} ratio is relatively low and the pristane/phytane ratio high. This, together with the low CPI value indicates an input from amorphous kerogen of moderate maturity. The n-alkane distribution is, however, strange with a very large abundance of nC_{14} and an indication of a bimodal distribution with a second maximum at nC_{23}. The latter could be due to an input of hydrocarbons from a mature terrestrial source. In the distribution of the n-alkanes of the samples from 1670-85, 1881-1896 m and 1986-2001 m, the large abundance of nC_{14} and the bimodal distribution is more distinct. The large abundance of nC_{14} is not presently understood. The gas chromatogram of the saturated hydrocarbons from sample 1776-91 m is very different with a smooth unimodal distribution typical for well mature hydrocarbons of amorphous origin. The gas chromatogram of the saturated distribution of the sample from 2076-2091 m is different from all the other analysed samples from this zone. The nC_{14} is again very pronounced while the pristane/nC_{17} ratio is approximately 1.0. The large difference is, however, the very large unresolved envelope indicating a very large proportion of napthenic material. The gas chromatograms of the saturated hydrocarbons of the three last analysed samples from this zone, 2151-66 m, 2196-2211 m and 2256-71 m are all relatively similar with relatively high pristane/nC_{17} ratio and CPI value together with a bimodal distribution. The high molecular weight n-alkanes have a relatively high abundance. All together, the distribution found for these samples indicates an input from a mixture of amorphous and terrestrial material.

Zone G: One sample, 2301-16 m, from this zone was extracted and found to have a rich abundance of extractable hydrocarbons. When the results are normalized to organic carbon, the sample is found to have a good extractability of organic matter. This discrepancy is probably due to the sample

being relatively immature. The composition of the hydrocarbons is found to be similar to those from the zone above, with a higher percentage of saturates compared to the aromatics. The gas chromatogram of the saturated hydrocarbons is relatively similar to those from the lower part of zone F with a high pristane/nC_{17} ratio, relatively high CPI and a large abundance of nC_{14}.

Zone H: Two samples, 2346-61 m and 2436-51 m, from this zone were extracted and found to have a good abundance of extractable hydrocarbons. When the results are normalized to organic carbon, the extractability is far lower, probably due to low maturity. The gas chromatograms of the saturated hydrocarbons are similar to the one sample from zone G, but the pristane/nC_{17} ratio is lower. Similar results are also seen for the CPI values for the samples. This would indicate a higher maturity or an increase of the amorphous material in the kerogen.

Zone I: Eight samples from this zone were extracted. The sample from 2481-96 m, representing the boundary between zones H and I has a good abundance of extractable hydrocarbons while the rest of the analysed samples have rich abundances of extractable hydrocarbons. Similar results are also seen for the organic carbon normalized results except for the two lowermost samples which have slightly lower extractability. The composition of hydrocarbons are similar for these samples with approximately twice the amount of saturated hydrocarbons compared to aromatic hydrocarbons. A slightly higher percentage of aromatics are found in the lowermost sample. The gas chromatograms of the saturated hydrocarbons change with increasing depth. The two upper samples, 2481-96 m and 2511-26 m show a distinct odd even predominance and a large input of high molecular weight n-alkanes, indicating an input of terrestrial material. The next three samples have a far less pronounced CPI value but still a pronounced abundance of high molecular weight hydrocarbons are seen. The lower three analysed samples in this zone, 2590-2605 m and 2620-2635 m have a far more front biased distribution indicating either higher maturity or an input of more amorphous origin. A strange peak is seen between nC_{21} and nC_{22}. A sterane hump in this chromatogram indicates a terrestrial input.

Zone J: No samples available.

Zone K: One sample, 2775-90 m was extracted and found to have a rich abundance of extractable hydrocarbons with a composition similar to those from the lower part of zone I. The gaschromatogram of the saturated hydrocarbon fraction shows a front biased distribution typical for well mature hydrocarbons.

Zone L: Three samples from this zone were analysed and all found to have a rich abundance of extractable hydrocarbons which a decreased with increasing depth. This is verified by the organic carbon normalized values. The composition of the hydrocarbons for the sample from 2845-60 m and 2890-2905 m is similar to those from the zones above, while the sample from 2920-35 m has a far higher percentage of aromatic hydrocarbons. The gas chromatograms of the saturated hydrocarbon fractions vary from sample to sample. The sample from 2845-60 m shows a distribution similar to the one from zone K while the sample from 2890-2905 m shows a strange peak between nC_{19} and nC_{20} together with a very pronounced nC_{14}. The n-alkanes up to nC_{30} are very pronounced indicating an input mainly from terrestrial material, but with a high maturity. The sample from 2920-35 m shows a front biased distribution indicating high maturity.

Zone M: No samples available.

Zone N: The amount of the samples was too small to be analysed.

Analyses in Reflected Light.

Thirtyeight samples were analysed in reflected light. Below, each sample is described and other information from the analyses is given together with the vitrinite reflectance data.

Sample K 4951, 770 m: Soft, light mudstone, Ro = 0.44 (7).
The sample has a moderate organic content with very small particles of organic material, mostly too small and too much relief to identify. Particles of reworked and inertinite are dominant. A handful of poor, true vitrinite particles are recorded. UV light shows a yellow/orange fluorescence from spores and hydrocarbon specks together with a trace of exinite.

Sample K 4957, 890 m: Soft, light shale, Ro = 0.42 (5).
The sample has a moderate content of small particles of inertinite and reworked material. One wisp and a few small particles of possibly true vitrinite. UV light shows a yellow/orange fluorescence from spore specks and a trace of exinite.

Sample K 4963, 1010 m: Soft shale, Ro = 0.34 (6).
The sample has a low to moderate organic content with small, gnarled particles of inertinite and reworked material. Only a trace of poor vitrinite as wispy particles. Locallised bitumen staining is observed. UV light shows a yellow/orange fluorescence from spores and a low exinite content.

Sample K 4966, 1070 m: Light shale, Ro = 0.35 (12).
The sample has a low content of small particles of inertinite and reworked material. Only a trace of poor vitrinite particles and wispy particles. UV light shows a yellow to mid. orange fluorescence from spores, very variable, and a low to moderate exinite content.

Sample K 4969, 1130 m: Shale and carbonate, Ro = 0.37 (10).
The sample has a low organic content, almost wholly reworked material and inertinite particles. A few wispy particles and particles of true vitrinite. Bitumen wisps and staining in a few cuttings. UV light shows a yellow/orange fluorescence from spores and a low exinite content.

Sample K 4972, 1190 m: Shale and carbonate, Ro = 0.37 (13).
The sample has a low organic content. The carbonate is barren while the shale is dominated by particles of inertinite and reworked material . A few poor vitrinite particles of lower reflectance value could possibly be true. Bitumen blebs are recorded in the sample. UV light shows a yellow/orange fluorescence from spores and a low exinite content.

Sample K 4974, 1230 m: Shale, siltstone and carbonate, Ro = 0.38 (15).
The sample has a low organic content restricted to the shale and carbonate. Bitumen wisps and locallised staining are observed. Reworked material and inertinite material are dominant in the sample which only contains a trace of true vitrinite. UV light shows a yellow/orange fluorescence from spores and a low to moderate exinite content.

Sample K 4978, 1320 m: Shale and subordinate carbonate, Ro = 0.38 (11). The sample has a low organic content with a few inertinite and reworked particles. Only a trace of poor vitrinite particles and wispy particles. Bitumen wisps and blebs are recorded in the sample. UV light shows a yellow/ orange fluorescence from spores and a low to moderate exinite content.

Sample K 4982, 1380 m: Shale, Ro = 0.39 (16).
The sample has a low organic content with bitumen wisps and locallised staining. Inertinite and reworked material are dominant. Only a trace of wispy particles and particles of vitrinite. UV light shows a yellow/orange and mid. orange fluorescence from spores and a moderate exinite content.

Sample K 4985 m: Shale, Ro = 0.35 (10) and Ro = 0.57 (2).
The sample has a low organic content, mainly inertinite and reworked particles. Only a trace of poor vitrinite particles. Plentiful bitumen wisps and staining are recorded. UV light shows a yellow/orange fluorescence from spores and a moderate exinite content.

Sample K 4989, 1485 m: Shale, Ro = 0.43 (5).
The sample has a low organic content with bitumen wisps and blebs, inertinite and reworked particles. UV light shows a yellow/orange from spores and a moderate exinite content.

Sample K 4992, 1530 m: Shale, Ro = 0.41 (1).
The sample has a low to moderate organic content. It is full of small specks of high relief organic material, mostly too small to identify. A few larger reworked and inertinite particles. One of possibly true vitrinite. Some bitumen wisps are recorded. UV light shows a yellow/ orange fluorescence from spores and a low-moderate exinite content.

Sample K 5134, 1625 m: Carbonate and shale, Ro = 0.43 (5).
The sample contains bitumen wisps and locallised staining, otherwise a low content of gnarled inertinite and reworked particles. Only a trace of rather poor vitrinite particles. UV light shows a mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5137, 1670 m: Shale and carbonate, Ro = 0.48 (6).
The sample contains bitumen wisps and staining, otherwise a low content of

inertinite and reworked particles. Only a handful of poor vitrinite particles. UV light shows a mid. orange fluorescence from spores and a low to moderate exinite content.

Sample K 5138, 1685 m: Shale and carbonate, Ro = 0.45 (21).
The sample has a moderate organic content with gnarled particles of inertinite and reworked material - together with some vitrinite wispy particles and bitumen wisps. UV light shows a mid. orange fluorescence from spores and hydrocarbon specks together with a low exinite content.

Sample K 5144, 1776-91 m: Shale, Ro = 0.42 (16) and Ro = 0.66 (15).
The sample has a moderate organic content with gnarled particles of inertinite and reworked material - together with some vitrinite wispy particles. UV light shows a light and mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5151, 1881-96 m: Shale, Ro = 0.41 (16) and Ro = 0.61 (2).
The sample has a low to moderate organic content, mainly inertinite and reworked particles. Some vitrinite and reworked particles are recorded. UV light shows a yellow to orange and light orange fluorescence from spores and a moderate exinite content.

Sample K 5157, 1971-86 m: Shale, Ro = 0.44 (12).
The sample has a low organic content, mainly inertinite particles and reworked material together with a few vitrinite particles. UV light shows a yellow to orange and light orange fluorescence from spores and a low to moderate exinite content.

Sample K 5164, 2076-91 m: Shale, Ro = 0.52 (14).
The sample has a low to moderate content of organic carbon, mostly inertinite particles and reworked material. A few vitrinite particles and wispy particles are recorded. UV light shows a light orange and mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5168, 2136-51 m: Shale, Ro = 0.49 (20).
The sample has a moderate content of organic carbon, mostly inertinite and reworked particles together with vitrinite wisps and particles. UV light shows a mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5172, 2196 m: Shale and siltstone, Ro = 0.58 (20) and Ro = 0.86 (1).
The sample contains bitumen staining and wisps, otherwise a low to moderate organic content of inertinite and reworked particles together with a few particles of good vitrinite. UV light shows a mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5176, 2256 m: Shale, Ro = 0.57 (18).
The sample contains small gnarled particles of inertinite and reworked material together with a few particles of vitrinite and bitumen wisps. UV light shows a mid. orange fluorescence from spores and a moderate exinite content.

Sample K 5179, 2301, Shale, Ro = 0.58 (20).
The sample has a moderate organic content with an overall bitumen staining and small particles of inertinite and reworked material. A few poor vitrinite wispy particles are recorded. UV light shows a mid. orange to deep orange fluorescence from spores and a low exinite content.

Sample K 5182, 2346 m: Shale with subordinate carbonate, Ro = 0.57 (19).
The sample has an overall bitumen staining and wisps. Otherwise a moderate content of inertinite and reworked particles. Only a trace of vitrinite wispy particles. UV light shows a light and mid. orange fluorescence from spores and hydrocarbon specks together with a moderate exinite content.

Sample K 5188, 2436 m: Shale and siltstone, Ro = 0.62 (20).
The sample has an overall light bitumen staining and wisps, otherwise a moderate content of inertinite and reworked particles. The lowest reflectance particles were measured. These may be true, but the differentiation is difficult. UV light shows a deep orange fluorescence from spores and hydrocarbon specks together with a trace of exinite.

Sample K 5191, 2481 m: Shale and carbonate, Ro = 0.62 (22).
The sample contains bitumen wisps and light staining otherwisw a moderate content of inertinite and reworked particles. Some vitrinite wispy particles are recorded but the differentiation is difficult. UV light shows a mid. orange fluorescence from spores and a low to moderate exinite content.

Sample K 5193, 2511, Shale, Ro = 0.53 (20).
The sample has an overall bitumen staining, otherwise a low to moderate content of inertinite and reworked particles with a good proportion of true particles. UV light shows a mid. to deep orange fluorescence from spores and a moderate to rich exinite content.

Sample K 5248, 2530-45 m: Shale, Ro = 0.53 (13).
The sample has a heavy, overall bitumen staining, otherwise a low organic content with a few inertinite and reworked particles and corroded vitrinite wisps. UV light shows a deep orange fluorescence from spores and hydrocarbon specks together with a low exinite content.

Sample K 5250, 2560-75 m: Shale, Ro = 0.60 (20).
The sample has a heavy overall bitumen staining, otherwise a moderate content of inertinite particles with small corroded vitrinite wisps. UV light shows a mid. orange fluorescence from spores and hydrocarbon specks together with a low exinite content.

Sample K 5252, 2590-2605 m: Shale, Ro = 0.62 (21).
The sample has an intense bitumen staining, otherwise a moderate content of vitrinite wisps with about equal proportion of inertinite. UV light shows a mid. orange fluorescence from spores and hydrocarbon specks together with a moderate exinite content.

Sample K 5257, 2665-80 m: Shale, Ro = 0.60 (21).
The sample has an overall bitumen staining, otherwise a low content of small inertinite particles and corroded vitrinite wisps. UV light shows a deep orange fluorescence from spores and hydrocarbon specks together with a low exinite content.

Sample K 5259, 2705-20 m: Shale, Ro = 0.66 (20).
The sample has an overall bitumen staining, otherwise a low content of small inertinite particles and poor corroded vitrinite wispy particles. UV light shows a mid. to deep orange fluoresence from spores and hydrocarbon specks together with a low to moderate exinite content.

Sample K 5260, 2775-90 m: Shale, Ro = 0.76 (20).
The sample has an overall bitumen staining, otherwise a low content of vitrinite wisps and inertinite particles. Some loose coal cuttings, vitrinitic

with slightly higher reflectance are recorded. UV light shows a mid. to deep orange fluorescence from spores and a moderate exinite content.

Sample K 5262, 2845-60 m: Shale, Ro = 0.85 (22).
The sample has an overall bitumen staining, otherwise a few vitrinite wisps and inertinite particles with frequent loose vitrinite coal fragments. UV light shows a deep orange fluorescence from spores and a low exinite content.

Sample K 5264, 2890-2905 m: Shale, Ro = 0.31 (9) and Ro = 0.73 (13).
The sample has an overall strong bitumen staining. Some loose lignite cuttings with low reflectance, probably and additive. Otherwise a low content of high reflectance variable vitrinite wisps with inertinite particles in shale. UV light shows a deep orange fluorescence from spores and hydrocarbon specks together with a moderate exinite content.

Sample K 5267, 2938-53 m: Shale, Ro = 0.83 (22).
The sample has an overall strong bitumen staining, otherwise a low content of vitrinite wisps and inertinite particles with a good content of loose vitrinite coal fragments. UV light shows an orange/red fluorescence from spores and a moderate exinite content.

Sample K 5270, 3010-25 m: Shale, Ro = 0.83 (20).
The sample has a strong overall bitumen staining, otherwise a low content of vitrinite wisps and inertinite. A few very brecciated coal fragments are recorded. UV light shows a deep orange fluorescence from spores and hydrocarbon specks together with a low exinite content.

Sample K 5275, 3085-88 m: Carbargillite, Ro = 1.15 (23).
The sample contains high reflectance wisps and stringers of vitrinite but inertinite is dominant. The differentiation is difficult. Phytoclasts are set in bitumen-stained matrix. UV light shows a fluorescence from hydrocarbon traces.

Visual Kerogen Examination.

Alltogether 35 cuttings samples were treated according to our standard procedure for isolation of acid resistant organic material enclosed in rocks.

The evaluation and typing of the organic matter is based on total acid insoluble residues if necessary with support from palynological slides. We suspect that caved material is present in the assemblages from 1070 m to 1400 m or that reworked material is abundant.

Samples 770 790 m, 890-910 m and 1010-1030 m: Amorphous material dominates and is generally recorded as aggregates. The terrestrial element, 30% to 50%, consists of indeterminated herbaceous and woody matter. The cysts are well preserved.
Colour index: 1+/2- is based on pollen grains.

Samples 1070-1090 m and 1130-1150 m: Half of the residues or more is amorphous matter. In the upper sample the other half is a mixed terrestrial, probably reworked assemblage. Since mud additives (nut shells) were observed we have separated these two samples as being poor and probably not very reliable.
Colour index: 1+/2- and 2/2+, 2+/3-.

Samples 1190-1210 m, 1230-1250 m, 1320-1335 m and 1380-1385 m: The residues of this interval were dominated by amorphous material and include well preserved dinoflagellate cysts. However, we also find 30% to 50% of terrestrial varied debris, and there is clearly reworked material present.
Colour index: 1+/2- and 2/2+, 2+/3-.

Samples 1425-1440 m, 1485-1500 m, 1530-1545 m, 1625-1640 m, 1670-1685 m, 1685-1700 m, 1776-1791 m, 1881-1896 m, and 1971-1986 m: Sapropel dominates all the residues. Terrestrial material seems dominant at level 1625-1640 m and accounts for nearly half of the residues down to 1986 m. Cuticular material is present, 10-15%, in the same samples and indicates deposition closer to shore line.
Colour index: 2-/2.

Samples 2076-2091 m, 2136-2151 m and 2196-2211 m: The residues resemble those of interval 1425 to 1986 m, and have been distinguished from them on the basis of an increased coalification and the presence of amorphous material in dense aggregates.
Colour index: 2/2+.

Samples 2256-2271 m, 2301-2316 m and 2436-2451 m: The residues are dominated by amorphous matter, forming dense aggregates as for samples 2076 m to 1986 m. The aggregates embed well preserved cysts. Indeterminated herbaceous matter and woody material count for about 5 to 20% of the residues. The pollen grains present were poorly preserved while spores were well preserved.
Colour index: 2+/3-.

Samples 2301-2316 m, 2346-2361 m and 2436-2451 m: The residues are dominated by amorphous matter, often forming dense aggregates, and embedding well preserved cysts. Indeterminated herbaceous matter and woody material accounts for about 5 to 20%, pollen grains present are poorly preserved. Cretaceous/Late Jurassic spores are well preserved.
Colour index: 2 or 2+/3-.

Samples 2481-2496 m, 2515-2530 m, 2545-2560 m, 2575-2590 m, 2590-2605 m, 2620-2635 m, 2775-2790 m, 2890-2905 m and 2938-2953 m: Terrestrial material accounted for 20 to 55% of the total residues (except 2620-2635 m). The preservation is poor due to string sapropelization. Due to this and to formation of aggregates, true sapropel is difficult to distinguish from sapropelized cuticular material.

Rock-Eval Pyrolyses.

A total of thirtytwo samples were pyrolysed on a Rock-Eval instrument. Below, the results are discussed zone by zone.

Zones A, B and C: No samples analysed.

Zone D: Three samples from the lower part of the zone were analysed and all found to have low hydrogen indices and high oxygen indices typical for kerogen type III. The petroleum potential is low for these samples which also is found to have a low T_{max} value, i.e. immature.

Zone E: No samples analysed.

Zone F: Eight samples, spread throughout the zone, were analysed. The results are similar to those in zone D, but with a slightly higher petroleum index. The T_{max} is also slightly higher and the zone will be classified as moderate mature to mature.

Zone G: One sample from this zone was analysed. This has a very low hydrogen index and will be classified as type III kerogen.

Zone H: Two samples were analysed. The hydrogen and oxygen indices are similar to the analysed sample in zone G. There is, however, a large difference in the T_{max} value for the two samples, which could indicate a break in succession at this level.

Zone I: Eight samples were analysed from this zone, all showing a low to moderate hydrogen index and a high oxygen index, indicating a mixture of kerogen type II and III. The petroleum potential increases for these samples compared to the samples higher up in the well, and is found to be fair to good. The T_{max} is rather high for all the samples which will be classified as mature.

Zone J: No samples available.

Zone K: One sample from this zone was analysed and found to have results very similar to those from zone I.

Zone L: Five samples from this zone was analysed. The hydrogen index vary considerably for these samples, from typical kerogen type II in the sample from 2860-75 m to kerogen type III in the sample from 2920-35 m. The rest of the samples probably have a mixture of kerogen type II and type III. The petroleum potential is fair to good for all the samples which are found to be mature.

Zone M: No samples available.

Zone N: Four samples from this zone were analysed. The uppermost analysed sample shows results typical for kerogen type III while the rest are probably mixtures of kerogen type II and III. The two lowermost samples have a rich petroleum potential while the two other samples have a fair potential. The T_{max} values indicate the samples to be mature with the lowermost sample probably having a condensate window maturity.

CONCLUSION.

The source rock evaluation of this well is based on an interpretation of the various analyses. The maturity is mainly based on the vitrinite reflectance measurements, fluorescence in UV light, colour of kerogen in transmitted light and the T_{max} from the Rock-Eval pyrolyses. The richness is based on the total organic carbon, light hydrocarbons, extractable hydrocarbons and the S_1 peak in the Rock-Eval pyrolyses, while the source rock typing is based on the visual kerogen examination, the hydrocarbon composition and the gas chromatograms of the saturated hydrocarbons together with the Rock-Eval pyrolyses data.

Zone A, 410-580 m: This zone which consists mainly of claystone, is found to be immature with a very variable organic carbon content. Very few follow up analyses were undertaken due to the low maturity and the zone is tentatively rated to have a fair potential as a source rock for hydrocarbons.

Zone B, 580-690 m: Another zone with mainly claystone. The wetness of the gas is higher in this zone which could indicate that the zone contains some migrated hydrocarbons. On the whole, the zone is found to be immature with a good potential as a source rock for gas and oil.

Zone C, 690-1010 m: Another zone with mainly claystone. The abundance of organic carbon is lower than in the zone above. Very few follow up analyses are undertaken in this zone which is found to be immature with a fair potential as a source rock for gas and oil. Free hydrocarbons are registered in some samples.

Zone D, 1010-1440 m: The lithology of this zone is fairly similar to the zone above and will be given the same rating down to 1300 m, i.e. immature with a fair potential as a source rock for gas and oil. From 1300 m the claystone has a fair/good potential as a source rock for oil and gas.

Zone E, 1440-1565 m: The kerogen composition changes slightly in this zone to more amorphous, but there is still a fair amount of terrestrial kerogen. The amount of organic carbon increases slightly and the zone is found to be immature with a fair to good potential as a source rock for gas and oil.

Zone F, 1565-2271 m: The maturity inceased in this zone compared to the zones above. A slight discrepancy is found in the maturity measurements where both visual kerogen and the Rock-Eval pyrolyses show the zone to be mature while the vitrinite reflectance measurements indicate the zone to be moderate mature. The lower vitrinite reflectance measurements might be due to the heavy bitumen staining which will lower the reflectance values. The kerogen composition changes to a more terrestrial type compared to zone E. On the whole the zone is found to be moderate mature to mature with a good potential as a source rock for gas and oil. Free hydrocarbons are found in some samples.

Zone G, 2271-2331 m: This zone consists almost completely of a dark grey claystone. The kerogen composition as seen in transmitted light is found to be more amorphous than the zone above, while this is in direct conflict with the Rock-Eval pyrolyses which show the kerogen to be typical type III. Similar discrepancies are also found in samples from the North Sea, and this is attributed as a result of either sapropelized terrestrial material, which looks amorphous, or a large amount of reworked "dead" carbon. Both of these factors will lower the hydrogen index. The extraction results favour the first possibility. Based on these various results, the zone is found to be mature with a rich potential as a source rock for gas and oil.

Zone H, 2331-2481 m: This zone is similar to the zone above, and given the same rating. Free hydrocarbons are found in some samples from the zone.

Zone I, 2481-2720 m: The claystone in this zone is found to have an oil-window maturity by the various measurements. The claystone has a rich potential as a source rock for gas. Visual kerogen examination shows a jump in the colour of the kerogen to darker at approximately 2500 m. This is believed to be due to a change in maturity. Free hydrocarbons are registered over large parts of the zone.

Zone J, 2720-2775 m: No samples available.

Zone K, 2775-2845 m: The samples in this zone vary a lot in lithology. The one claystone sample, 2775-90 m is found to have an oilwindow maturity with a rich potential as a source rock for gas and oil. Free hydrocarbons registered in the zone.

Zone L, 2845-2968 m: The claystone in the upper part of this zone has a good abundance of organic carbon changing to a rich abundance in the lower part. The maturity gradient is very high in this zone indicating a large heat flux. The upper part of this zone is the only part of the whole well which has a high hydrogen index indicating a potential for oil and gas. Based on the various analyses, the whole zone is found to have an oilwindow maturity. The claystone in the upper part of the zone has a rich potential as a source rock for oil and gas changing to a rich potential for gas in the lower part.

Zone M: 2968-3010 m: No samples available.

Zone N: 3010-3088 m: This zone consists mainly of sandstone. The claystone in the zone is found to have an oilwindow maturity with a rich potential as a source rock for oil and gas.

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K4957	890	1961	36	39	14	11	75	2061	100	4.85	1.27
K4958	910	3785	101	95	51	37	18	4069	284	6.98	1.38
K4959	930	2374	49	56	28	19	121	2526	152	6.02	1.47
K4960	950	11867	319	224	86	59	23	12555	688	5.48	1.46
K4961	970	11177	405	464	168	117	204	12331	1154	9.36	1.44
K4962	990	1799	49	47	29	15	10	1939	140	7.22	1.93
K4963	1010	6621	131	129	63	27	98	6971	350	5.02	2.33
K4964	1030	6951	281	212	112	41	30	7597	646	8.50	2.73
K4965	1050	6750	222	224	117	45	805	7358	608	8.26	2.60
K4966	1070	4977	228	200	109	43	29	5557	580	10.44	2.53
K4967	1090	5397	255	240	103	43	99	6038	641	10.62	2.40
K4968	1110	5404	289	233	114	40	23	6080	676	11.12	2.85
K4969	1130	7178	319	369	190	69	191	8125	947	11.66	2.75
K4970	1150	6171	600	521	259	89	153	7640	1469	19.23	2.91
K4971	1170	393	36	33	16	6	18	484	91	18.80	2.67
K4972	1190	2888	324	256	115	41	88	3624	736	20.31	2.80
K4973	1210	5238	475	328	131	34	94	6206	968	15.60	3.85
K4974	1230	2867	348	332	162	59	175	3768	901	23.91	2.75
K4975	1250	1706	174	154	87	28	43	2149	443	20.61	3.11
K4976	1270	5808	377	164	67	164	67	6580	772	11.73	.41
K4977	1305	6024	417	417	227	104	387	7189	1165	16.21	2.18
K4978	1320	4741	321	309	175	85	436	5631	890	15.81	2.06
K4979	1335	5610	3282	270	335	222	953	9719	4109	42.28	1.51
K4980	1350	2885	268	234	115	54	279	3556	671	18.87	2.13
K4981	1365	4553	331	341	188	97	188	5510	957	17.37	1.94

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K4932	410	O P E N		L I D .							
K4933	425	54028	2460	952	247	132	1103	57819	3791	6.56	1.87
K4934	440	3452	176	86	35	40	61	3789	337	8.89	.87
K4935	460	21518	1101	1023	567	536	689	24745	3227	13.04	1.06
K4936	480	48210	1401	1213	1488	780	3383	53092	4882	9.20	1.91
K4937	500	40620	531	379	916	156	1415	42602	1982	4.65	5.87
K4938	520	4757	29	31	85	26	260	4928	171	3.47	3.27
K4939	540	44755	48	54	74	24	1790	44955	200	.44	3.08
K4940	560	64813	70	243	1985	580	3561	67691	2878	4.25	3.42
K4941	580	3015	28	73	111	52	186	3279	264	8.05	2.13
K4942	600	1728	245	654	345	267	341	3239	1511	46.65	1.29
K4943	615	17668	1920	2517	981	986	1517	24072	6404	26.60	.99
K4944	645	14520	1485	1446	605	546	986	18602	4082	21.94	1.11
K4945	660	11527	1246	1251	528	490	1695	15042	3515	23.37	1.08
K4946	670	14894	1138	947	316	269	228	17564	2670	15.20	1.17
K4947	690	7929	206	250	120	108	746	8613	684	7.94	1.11
K4948	710	9499	150	149	51	58	130	9907	408	4.12	.88
K4947	730	6869	106	87	39	46	170	7147	278	3.89	.85
K4950	750	2185	80	52	15	14	3	2346	161	6.86	1.07
K4951	770	9707	56	99	45	57	188	9964	257	2.58	.79
K4952	790	8713	49	83	39	58	191	8942	229	2.56	.67
K4953	810	4771	70	66	23	21	314	4951	180	3.64	1.10
K4954	830	4162	43	35	9	9	105	4258	96	2.25	1.00
K4955	850	8210	160	81	3	20	6	8474	264	3.12	.15
K4956	870	11	38	77	29	23	44	178	167	93.82	1.26

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K4982	1380	4998	322	340	173	106	295	5939	941	15.84	1.63
K4983	1395	9821	782	807	412	237	25	12059	2238	18.56	1.74
K4984	1410	3951	280	293	143	90	367	4757	806	16.94	1.59
K4985	1425	3345	224	279	167	109	8	4124	779	18.89	1.53
K4986	1440	O P E N	L I D .								
K4987	1455	O P E N	L I D .								
K4988	1470	O P E N	L I D .								
K4989	1485	O P E N	L I D .								
K4990	1500	O P E N	L I D .								
K4991	1515	O P E N	L I D .								
K4992	1530	O P E N	L I D .								

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5130	1565	8709	1078	1364	513	479	640	12143	3434	28.28	1.07
K5131	1580	7584	1234	1577	606	461	408	11462	3878	33.83	1.31
K5132	1595	6853	896	967	359	276	237	9351	2498	26.71	1.30
K5133	1610	5896	1188	1851	704	629	658	10268	4372	42.58	1.12
K5134	1625	8469	1423	2089	795	721	767	13497	5028	37.25	1.10
K5135	1640	8214	1724	2524	942	826	900	14230	6016	42.28	1.14
K5136	1655	10626	2171	3237	1218	1028	1019	18280	7654	41.87	1.18
K5137	1670	19245	4489	7424	2789	2394	2200	36341	17096	47.04	1.16
K5138	1685	12104	2181	3366	1264	1241	1536	20156	8052	39.95	1.02
K5139	1700	7949	1849	2489	825	798	903	13910	5961	42.85	1.03
K5140	1716	5723	1295	2517	1220	1437	3193	12192	6469	53.06	.85
K5141	1731	7053	1164	2892	1341	1511	3230	13961	6908	49.48	.89
K5142	1746	2224	326	792	339	422	594	4103	1879	45.80	.80
K5143	1761	7856	1132	2714	1145	1322	2092	14169	6313	44.56	.87
K5144	1776	10313	1590	3957	1701	1953	2806	19514	9201	47.15	.87
K5145	1791	13357	2351	6488	2822	2975	3657	27993	14636	52.28	.95
K5146	1806	7493	1393	3230	1240	1375	2020	14731	7238	49.13	.90
K5147	1821	147	75	77	41	41	187	381	234	61.42	1.00
K5148	1836	6106	1189	3538	1466	1551	1964	13850	7744	55.91	.95
K5149	1851	4912	738	1939	710	780	1121	9079	4167	45.90	.91
K5150	1866	4855	726	1758	687	652	989	8628	3773	43.73	.98
K5151	1881	4394	1305	2135	564	559	623	8957	4563	50.94	1.01
K5152	1896	349	82	192	78	78	276	779	430	55.20	1.00
K5153	1911	2701	457	1148	385	401	558	5092	2391	46.96	.96
K5154	1926	1639	284	737	231	240	332	3131	1492	47.65	.96

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5155	1941	2373	513	1225	342	353	310	4806	2433	50.62	.97
K5156	1956	2216	430	1049	291	293	216	4279	2063	48.21	.99
K5157	1971	2134	421	1099	319	334	302	4307	2173	50.45	.96
K5158	1986	4396	930	2304	612	651	631	8893	4497	50.57	.94
K5159	2000	2776	720	1869	472	445	405	6282	3506	55.81	1.06
K5160	2016	1737	405	1286	366	382	415	4176	2439	58.41	.96
K5161	2031	2635	601	2142	671	662	735	6711	4076	60.74	1.01
K5162	2046	1562	448	1150	306	334	368	3800	2238	58.89	.92
K5163	2061	2004	404	1348	385	472	231	4613	2609	56.56	.82
K5164	2076	4258	1415	1398	1345	1051	521	9467	5209	55.02	1.28
K5165	2091	3393	1049	2307	496	529	497	7774	4381	56.35	.94
K5166	2106	5330	2488	5521	1128	1120	792	15587	10257	65.80	1.01
K5167	2121	2786	967	2389	496	680	819	7318	4532	61.93	.73
K5168	2136	2250	742	1682	354	470	487	5498	3248	59.08	.75
K5169	2151	2054	703	1647	639	493	483	5536	3482	62.90	1.30
K5170	2166	2200	849	2079	451	650	696	6229	4029	64.68	.69
K5171	2181	3440	852	1399	234	350	305	6275	2835	45.18	.67
K5172	2196	2835	768	1667	308	507	467	6085	3250	53.41	.61
K5173	2211	4350	1363	2848	496	928	278	9985	5635	56.43	.53
K5174	2226	601	165	316	56	89	40	1227	626	51.02	.63
K5175	2241	O P E N		L I D .							
K5176	2256	4232	2258	6794	1812	3424	4941	18520	14288	77.15	.53
K5177	2271	9703	5122	13551	2871	6401	5139	37648	27945	74.23	.45
K5178	2286	11497	4675	6242	1552	3259	4096	27225	15728	57.77	.48
K5179	2301	11242	3603	5730	947	1889	2293	23411	12169	51.98	.50

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5180	2316	8104	2493	3753	608	1261	1211	16219	8115	50.03	.48
K5181	2331	5206	2022	2847	436	746	724	11257	6051	53.75	.58
K5182	2346	7546	2073	2451	387	656	697	13113	5567	42.45	.59
K5183	2361	2551	1238	2183	336	664	154	6972	4421	63.41	.51
K5184	2376	1646	750	1171	161	274	205	4002	2356	58.87	.59
K5185	2391	1748	1190	2638	362	576	506	6514	4766	73.17	.63
K5186	2406	624	340	604	74	162	65	1804	1180	65.41	.46
K5187	2421	484	237	251	21	38	13	1031	547	53.06	.55
K5188	2436	2690	1305	1507	150	307	61	5959	3269	54.86	.49
K5189	2451	1327	823	932	95	186	161	3363	2036	60.54	.51
K5190	2466	1603	1027	1619	244	605	729	5098	3495	68.56	.40
K5191	2481	1114	1024	1965	285	1190	1924	5578	4464	80.03	.24
K5192	2496	O P E N		L I D .							
K5193	2511	3411	5838	11484	1415	5768	6883	27916	24505	87.78	.25

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5247	2515	48049	51976	88333	12206	43076	28180	243640	195592	80.28	.28
K5248	2530	48916	33877	41089	10486	36588	18784	170958	122041	71.39	.29
K5249	2545	18348	22383	32421	6009	23081	15033	102242	83894	82.05	.26
K5250	2560	52606	61729	88828	14832	50780	29425	268776	216169	80.43	.29
K5251	2575	55614	65955	114360	14558	50770	36734	301256	245643	81.54	.29
K5252	2590	132885	92332	89603	6984	21081	6808	342885	210000	61.25	.33
K5253	2605	8907	6327	9000	1448	4250	3790	29932	21026	70.24	.34
K5254	2620	6625	4736	7765	1479	4488	4954	25094	18469	73.60	.33
K5255	2635	7422	5529	9054	1583	4681	5203	28269	20847	73.74	.34
K5256	2650	2139	1938	3688	554	1783	2110	10102	7963	78.83	.31
K5257	2665	1214	1657	3483	500	1743	2657	8597	7382	85.88	.29
K5258	2690	1857	1088	2577	843	2105	4941	8470	6613	78.08	.40
K5259	2705	4394	4558	73712	822	3285	2666	86772	82378	94.94	.25
K5260	2775	36253	12150	10102	1052	3881	4586	63438	27184	42.85	.27
K5261	2791	1802	2099	2990	358	1374	1515	8623	6821	79.10	.26
K5262	2845	7771	3220	3022	329	1173	1328	15514	7743	49.91	.28
K5263	2860	30177	14366	12398	1332	4501	4504	62774	32597	51.93	.30
K5264	2890	35375	20387	27291	2895	11906	10223	97853	62478	63.85	.24
K5265	2905	17438	43342	6869	766	1795	1806	70210	52773	75.16	.43
K5266	2920	69549	13331	9731	1050	3236	3050	96896	27347	28.22	.32
K5267	2938	29117	5542	4651	541	1651	1533	41501	12385	29.84	.33
K5268	2953	24831	2724	2302	282	754	1645	30892	6061	19.62	.37
K5269	2968	37935	12231	13423	1438	5126	5473	70154	32219	45.93	.28

IKU

TABLE I a.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN HEADSPACE.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5270	3010	O P E N		L I D .							
K5271	3025	2590	668	674	75	244	336	4250	1660	39.07	.31
K5272	3040	7513	1639	621	50	122	128	9944	2431	24.45	.41
K5273	3055	13219	2274	667	50	87	116	16297	3078	18.89	.57
K5274	3070	47219	10623	2344	152	236	215	60574	13356	22.05	.64
K5275	3085	486927	76067	19763	1487	2916	3531	587160	100233	17.07	.51

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5130	1565	137	82	380	230	310	833	1139	1002	87.97	.74
K5131	1580	136	84	356	200	286	716	1062	926	87.19	.70
K5132	1595	195	143	523	276	371	841	1508	1313	87.07	.74
K5133	1610	148	86	399	228	330	592	1191	1043	87.57	.69
K5134	1625	264	176	684	369	499	863	1992	1728	86.75	.74
K5135	1640	13	7	16	7	9	5	52	39	75.00	.78
K5136	1655	O P E N		L I D .							
K5137	1670	257	83	817	520	913	2177	2590	2333	90.08	.57
K5138	1685	288	222	1441	700	1407	3253	4058	3770	92.90	.50
K5139	1700	76	55	569	386	611	309	1697	1621	95.52	.63
K5140	1716	82	19	259	422	584	1028	1366	1284	94.00	.72
K5141	1731	116	48	606	489	683	1146	1942	1826	94.03	.72
K5142	1746	107	45	601	473	590	1110	1816	1709	94.11	.80
K5143	1761	103	26	446	353	629	1438	1557	1454	93.38	.56
K5144	1776	133	29	454	328	579	1202	1523	1390	91.27	.57
K5145	1791	164	49	574	379	617	1034	1783	1619	90.80	.61
K5146	1806	105	48	568	343	550	985	1614	1509	93.49	.62
K5147	1821	116	75	709	450	694	296	2044	1928	94.32	.65
K5148	1836	161	69	711	439	671	265	2051	1890	92.15	.65
K5149	1851	142	46	343	182	371	173	1084	942	86.90	.49
K5150	1866	110	41	501	248	390	1375	1290	1180	91.47	.64
K5151	1881	92	154	915	353	472	663	1986	1894	95.37	.75
K5152	1896	136	249	1084	394	504	569	2367	2231	94.25	.78
K5153	1911	104	31	881	331	444	478	1791	1687	94.19	.75
K5154	1926	109	101	51	476	213	321	950	841	88.53	2.23

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5155	1941	140	107	610	208	289	414	1354	1214	89.66	.72
K5156	1956	O P E N		L I D .							
K5157	1971	450	27	37	71	61	65	646	196	30.34	1.16
K5158	1986	123	44	767	248	370	250	1552	1429	92.07	.67
K5159	2000	32	75	429	126	170	231	832	800	96.15	.74
K5160	2016	46	36	14	173	253	151	522	476	91.19	.68
K5161	2031	58	42	35	25	26	78	186	128	68.82	.96
K5162	2046	12	21	5	4	4	4	46	34	73.91	1.00
K5163	2061	186	267	1890	703	1016	1696	4062	3876	95.42	.69
K5164	2076	282	740	2935	780	1094	1410	5831	5549	95.16	.71
K5165	2091	282	740	2935	780	1094	1410	5831	5549	95.16	.71
K5166	2106	136	322	1796	527	795	1329	3576	3440	96.20	.66
K5167	2121	166	423	2328	637	1041	1762	4595	4429	96.39	.61
K5168	2136	12	7	5	4	4	4	32	20	62.50	1.00
K5169	2151	14	26	107	30	49	61	226	212	93.81	.61
K5170	2166	O P E N		L I D .							
K5171	2181	296	1226	4969	1102	1712	1655	9305	9009	96.82	.64
K5172	2196	711	498	2286	2026	970	1468	6491	5780	89.05	2.09
K5173	2211	161	69	711	439	671	265	2051	1890	92.15	.65
K5174	2226	142	46	343	182	371	173	1084	942	86.90	.49
K5175	2241	730	2410	9187	1928	3944	5873	18199	17469	95.99	.49
K5176	2256	30	292	5	4	4	4	335	305	91.04	1.00
K5177	2271	530	1686	15288	6511	16389	63296	40404	39874	98.69	.40
K5178	2286	390	1442	9388	5081	13952	43952	30253	29863	98.71	.36
K5179	2301	361	5351	3515	8607	4258	12189	22092	21731	98.37	2.02

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5180	2316	127	543	2905	631	1390	1641	5596	5469	97.73	.45
K5181	2331	403	731	2763	611	2422	1836	6930	6527	94.18	.25
K5182	2346	640	1778	5296	987	1973	1319	10674	10034	94.00	.50
K5183	2361	509	1707	6041	1192	2405	2439	11854	11345	95.71	.50
K5184	2376	135	359	1841	383	840	1013	3558	3423	96.21	.46
K5185	2391	227	428	2322	442	933	1032	4352	4125	94.78	.47
K5186	2406	174	421	1853	357	665	881	3470	3296	94.99	.54
K5187	2421	11	25	8	33	3	6	80	69	86.25	1.00
K5188	2436	3190	9784	13893	1211	1995	232	30073	26883	89.39	.61
K5189	2451	468	2238	5760	703	1491	1239	10660	10192	95.61	.47
K5190	2466	563	1826	5640	993	2341	2446	11363	10800	95.05	.42
K5191	2481	494	1226	5688	1412	4290	13878	13110	12616	96.23	.33
K5192	2496	393	2229	10809	2691	10588	18363	26710	26317	98.53	.25
K5193	2511	154	1906	12555	3191	12731	16913	30537	30383	99.50	.25

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5247	2515	1243	7448	42612	9732	46050	50582	107084	105841	98.84	.21
K5248	2530	639	3692	21002	4366	18643	20380	48341	47703	98.68	.23
K5249	2545	2062	5172	36906	9033	41850	56530	95022	92961	97.83	.22
K5250	2560	326	1547	10011	2511	10120	12488	24515	24189	98.67	.25
K5251	2575	1601	11574	50073	12034	48850	37695	124132	122531	98.71	.25
K5252	2590	5338	45113	63914	13159	44425	19573	171949	166612	96.90	.30
K5253	2605	138	875	2755	410	1461	1177	5639	5501	97.55	.28
K5254	2620	1117	2172	12344	3838	13438	25169	32909	31792	96.61	.29
K5255	2635	3434	1848	8588	2617	9556	22067	26043	22608	86.81	.27
K5256	2650	153	82	617	147	592	1782	1591	1438	90.38	.25
K5257	2665	1178	1383	12968	3851	15049	32501	34428	33250	96.58	.26
K5258	2690	3630	445	2122	903	3347	25929	10448	6818	65.25	.27
K5259	2705	3413	1757	11521	3634	14121	37925	34447	31034	90.09	.26
K5260	2775	6110	3705	12304	3125	12121	23748	37366	31256	83.65	.26
K5261	2791	464	438	2677	703	2827	7288	7109	6645	93.47	.25
K5262	2845	8037	2605	7315	1913	7137	13942	27007	18970	70.24	.27
K5263	2860	7673	861	3497	950	3694	8684	16675	9002	53.99	.26
K5264	2890	4398	5794	33620	7324	28735	37272	79872	75474	94.49	.25
K5265	2905	263	554	750	127	476	615	2170	1907	87.88	.27
K5266	2920	1030	662	1701	381	1406	2018	5181	4151	80.12	.27
K5267	2938	8117	4875	14042	3120	11291	16799	41446	33329	80.42	.28
K5268	2953	O P E N		L I D .							
K5269	2968	O P E N		L I D .							

IKU

TABLE I b.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS IN CUTTINGS.

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5270	3010	575	959	4376	1264	5004	6208	12178	11603	95.28	.25
K5271	3025	2311	1448	4609	1464	6075	16033	15906	13596	85.47	.24
K5272	3040	683	1192	4969	1787	7083	17842	15714	15031	95.65	.25
K5273	3055	34416	31383	18299	3377	11139	18070	98615	64199	65.10	.30
K5274	3070	39530	71725	45580	4289	9959	5547	171083	131554	76.89	.43
K5275	3085	78258	113714	59	4987	9810	4379	206827	128569	62.16	.51

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5130	1565	8846	1160	1744	743	789	1473	13282	4436	33.40	.94
K5131	1580	7720	1318	1933	806	747	1124	12524	4804	38.36	1.08
K5132	1595	7048	1039	1490	635	647	1078	10859	3811	35.10	.98
K5133	1610	6044	1274	2250	932	959	1250	11459	5415	47.26	.97
K5134	1625	8733	1599	2773	1164	1220	1630	15489	6756	43.62	.95
K5135	1640	8227	1731	2540	949	835	905	14282	6055	42.40	1.14
K5136	1655	O P E N		L I D .							
K5137	1670	19502	4572	8241	3309	3307	4377	38931	19429	49.91	1.00
K5138	1685	12392	2403	4807	1964	2648	4789	24214	11822	48.82	.74
K5139	1700	8025	1904	3058	1211	1409	1212	15607	7582	48.58	.86
K5140	1716	5805	1314	2776	1642	2021	4221	13558	7753	57.18	.81
K5141	1731	7169	1212	3498	1830	2194	4376	15903	8734	54.92	.83
K5142	1746	2331	371	1393	812	1012	1704	5919	3588	60.62	.80
K5143	1761	7959	1158	3160	1498	1951	3530	15726	7767	49.39	.77
K5144	1776	10446	1619	4411	2029	2532	4008	21037	10591	50.34	.80
K5145	1791	13521	2400	7062	3201	3592	4691	29776	16255	54.59	.89
K5146	1806	7598	1441	3798	1583	1925	3005	16345	8747	53.51	.82
K5147	1821	263	150	786	491	735	483	2425	2162	89.15	.67
K5148	1836	6267	1258	4249	1905	2222	2229	15901	9634	60.59	.86
K5149	1851	5054	784	2282	892	1151	1294	10163	5109	50.27	.77
K5150	1866	4965	767	2259	885	1042	2364	9918	4953	49.94	.85
K5151	1881	4486	1459	3050	917	1031	1286	10943	6457	59.01	.89
K5152	1896	485	331	1276	472	582	845	3146	2661	84.58	.81
K5153	1911	2805	488	2029	716	845	1036	6883	4078	59.25	.85
K5154	1926	1748	385	788	707	453	653	4081	2333	57.17	1.56

IKU

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5155	1941	2513	620	1835	550	642	724	6160	3647	59.20	.86
K5156	1956	O P E N		L I D .							
K5157	1971	2584	448	1136	390	395	367	4953	2369	47.83	.99
K5158	1986	4519	974	3071	860	1021	881	10445	5926	56.74	.84
K5159	2000	2808	795	2298	598	615	636	7114	4306	60.53	.97
K5160	2016	1783	441	1300	539	635	566	4698	2915	62.05	.85
K5161	2031	2693	643	2177	696	688	813	6897	4204	60.95	1.01
K5162	2046	1574	469	1155	310	338	372	3846	2272	59.07	.92
K5163	2061	2190	671	3238	1088	1488	1927	8675	6485	74.76	.73
K5164	2076	4540	2155	4333	2125	2145	1931	15298	10758	70.32	.99
K5165	2091	3675	1789	5242	1276	1623	1907	13605	9930	72.99	.79
K5166	2106	5466	2810	7317	1655	1915	2121	19163	13697	71.48	.86
K5167	2121	2952	1390	4717	1133	1721	2581	11913	8961	75.22	.66
K5168	2136	2262	749	1687	358	474	491	5530	3268	59.10	.76
K5169	2151	2068	729	1754	669	542	544	5762	3694	64.11	1.23
K5170	2166	O P E N		L I D .							
K5171	2181	3736	2078	6368	1336	2062	1960	15580	11844	76.02	.65
K5172	2196	3546	1266	3953	2334	1477	1935	12576	9030	71.80	1.58
K5173	2211	4511	1432	3559	935	1599	543	12036	7525	62.52	.58
K5174	2226	743	211	659	238	460	213	2311	1568	67.85	.52
K5175	2241	O P E N		L I D .							
K5176	2256	4262	2550	6799	1816	3428	4945	18855	14593	77.40	.53
K5177	2271	10233	6808	28839	9382	22790	68435	78052	67819	86.89	.41
K5178	2286	11887	6117	15630	6633	17211	48048	57478	45591	79.32	.39
K5179	2301	11603	8954	9245	9554	6147	14482	45503	33900	74.50	1.55

IKU

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5180	2316	8231	3036	6658	1239	2651	2852	21815	13584	62.27	.47
K5181	2331	5609	2753	5610	1047	3168	2560	18187	12578	69.16	.33
K5182	2346	8186	3851	7747	1374	2629	2016	23787	15601	65.59	.52
K5183	2361	3060	2945	8224	1528	3069	2593	18826	15766	83.75	.50
K5184	2376	1781	1109	3012	544	1114	1218	7560	5779	76.44	.49
K5185	2391	1975	1618	4960	804	1509	1538	10866	8891	81.82	.53
K5186	2406	798	761	2457	431	827	946	5274	4476	84.87	.52
K5187	2421	495	262	259	54	41	19	1111	616	55.45	1.32
K5188	2436	5880	11089	15400	1361	2302	293	36032	30152	83.68	.59
K5189	2451	1795	3061	6692	798	1677	1400	14023	12228	87.20	.48
K5190	2466	2166	2853	7259	1237	2946	3175	16461	14295	86.84	.42
K5191	2481	1608	2250	7653	1697	5480	15802	18688	17080	91.40	.31
K5192	2496	O P E N		L I D .							
K5193	2511	3565	7744	24039	4606	18499	23796	58453	54888	93.90	.25

IKU

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4 / nC4
K5247	2515	49292	59424	130945	21937	89126	78762	350724	301432	85.95	.25
K5248	2530	49555	37569	62092	14852	55231	39164	219299	169744	77.40	.27
K5249	2545	20409	27556	69327	15042	64930	71563	197264	176855	89.65	.23
K5250	2560	52932	63276	98840	17343	60900	41912	293291	240359	81.95	.28
K5251	2575	57215	77528	164433	26592	99620	74429	425388	368173	86.55	.27
K5252	2590	138223	137445	153517	20143	65506	26381	514834	376612	73.15	.31
K5253	2605	9045	7202	11755	1859	5711	4967	35572	26527	74.57	.33
K5254	2620	7742	6908	20109	5317	17927	30123	58003	50261	86.65	.30
K5255	2635	10856	7377	17642	4200	14237	27271	54311	43455	80.01	.30
K5256	2650	2292	2020	4305	701	2375	3892	11693	9401	80.40	.30
K5257	2665	2392	3040	16450	4350	16792	35157	43024	40632	94.44	.26
K5258	2690	5487	1533	4699	1746	5453	30871	18918	13431	71.00	.32
K5259	2705	7808	6316	85233	4456	17407	40591	121219	113412	93.56	.26
K5260	2775	42364	15856	22405	4177	16002	28334	100804	58440	57.97	.26
K5261	2791	2266	2537	5667	1061	4200	8802	15732	13466	85.60	.25
K5262	2845	15808	5824	10337	2242	8311	15270	42521	26713	62.82	.27
K5263	2860	37850	15228	15895	2282	8195	13188	79449	41600	52.36	.28
K5264	2890	39773	26181	60911	10219	40641	47494	177725	137952	77.62	.25
K5265	2905	17701	43896	7618	893	2271	2421	72380	54679	75.54	.39
K5266	2920	70579	13993	11432	1431	4642	5067	102077	31498	30.86	.31
K5267	2938	37234	10417	18694	3660	12942	18332	82947	45713	55.11	.28
K5268	2953	O P E N	L I D .								
K5269	2968	O P E N	L I D .								

TABLE I c.

CONCENTRATION (ul Gas / kg Rock) OF C1 - C7 HYDROCARBONS (Ia + Ib).

IKU No.	DEPTH (m)	C1	C2	C3	iC4	nC4	C5+	SUM C1-C4	SUM C2-C4	WET-NESS (%)	iC4/nC4
K5270	3010	O P E N		L I D .							
K5271	3025	4900	2116	5282	1539	6318	16369	20156	15256	75.69	.24
K5272	3040	8196	2831	5590	1837	7204	17970	25658	17462	68.06	.25
K5273	3055	47635	33657	18967	3427	11226	18186	114912	67277	58.55	.31
K5274	3070	86748	82349	47924	4441	10195	5762	231657	144909	62.55	.44
K5275	3085	565184	189780	19822	6474	12726	7909	793986	228802	28.82	.51

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4932	410-25		100% Sand, gravelly, fine to very coarse, angular to rounded, some well rounded, coarser grains largely crystalline rock fragments and grey claystone
K4933	425-40		100% Sand, as above, where coarse fragments consists of grey to light grey and occasionally redbrown and light green silty claystones, and crystalline rock fragments, obs brownish calcite (fibrous), grey Chert
K4934	440-60		100% Sand, as above, some yellow and redbrown Silt/Clay-stone
K4935	460-80		100% Sand, gravelly, fine to very coarse, angular to rounded, coarse fractions dominated by light grey to grey and greenish to light green claystone
K4936	480-500	0,47	100% Claystone, some silty, light grey to grey, some greenish and green sm.am. Calcite, clear;
K4937	500-20	0,55	100% claystone, light grey, with small particles of dark pyrite, some greenish sm.am. Sand, medium, angular - subrounded, clear; Pyrite aggregates, rods from burrows
K4938	520-40	0,63	100% Claystone, light grey, some grey, scattered black particles (?mainly Pyrite) sm.am. Siderite, yellowbrown, calcareous, brittle; Sand, as above

IKU

TABLE NO.: 11

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4939	540-60	0,58	100% Claystone, as above sm.am. Limestone, light yellowbrown, brittle, ?sideritic/dolomitic; Sand
K4940	560-80	0,95	100% Claystone, light grey to grey, some thin lamination
K4941	580-600	1,98	100% Claystone, variably silty, as above, slightly pyritic sm.am. Siderite, dolomitic (XRD), yellowbrown; Sand, as above
K4942	600-15	1,60	100% Claystone, variably silty, light grey to grey, some thin lamination (light lamii and darker pyritic very thin lamina), slightly micaceous
K4943	615-30	1,04	80% Claystone, variably silty, light grey to grey 20% Cement, white
K4944	645-60	0,68	100% Claystone, as above, slightly micaceous sm.am. Cement; Siderite, dolomitic, yellowbrown, hard; crystalline rock fragments
K4945	660-75	0,74	100% Claystone, as above
K4946	670-90	0,84	100% Claystone, light grey, grey, obs dark grey
K4947	690-710	1,03	100% Claystone, light grey, to grey

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4948	710-30	0,59	100% Claystone, as above sm.am. Siderite, dolomitic, yellowbrown, hard, partly sucrosic
K4949	730-50	0,57	100% Claystone, light grey to grey, occasionally very silty and some micaceous, some lamination
K4950	750-70	0,39	100% Claystone, occasionally silty, white to light grey, obs fine lamination, some grey, greenish, obs. Siltstone, light grey, slightly glauconitic
K4951	770-90	0,53	100% Claystone, light grey to white, grey, some light green, obs redbrown
K4952	790-810	0,54	100% Claystone, slightly sandy, grey, light grey, some white, greenish to green, redbrown sm.am. Sandstone, brownish light green, very fine, loose, clear grains (?glassy); brownish clear Calcite; calcareous light browngrey Silt, loose
K4953	810-30	0,52	100% Claystone, variably silty, grey, light grey to white, greenish to green, redbrown to violet sm.am. Siderite, dolomitic (XRD), hard, brown; Pyrite; Sandstone, both calcareous and silika cemented; brownish clear Sand in a very calcareous matrix; friable yellowbrown ?Siderite
K4954	830-50	0,48	100% Claystone, as above

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4955	850-70	0,59	100% Claystone, grey to light grey, some redbrown (occasionally glauconitic) and greenish sm.am. Siderite, as above, brown, hard; Pyrite
K4956	870-90	0,46	100% Claystone, as above
K4957	890-910	0,56	100% Claystone, grey to light grey, some redbrown sm.am. Siderite as above, Cement; Siltstone, browngrey, calcareous, loose
K4958	910-30	0,56	95% Claystone, grey, some light grey/white, redbrown, (some glauconitic), green 5% Cement sm.am. Siderite, hard, yellowbrown to dark bown, massive and sucrosic; friable light yellowbrown ?sid Silt/Clay (calcareous); Pyrite
K4959	930-50	0,57	100% Claystone, grey to light grey, some redbrown (some sandy and glauconitic), greenish sm.am. Cement; Sand/Sandstone, medium to coarse, angular to subangular, clear; Pyrite; Glauconite (framboidal); Siderite, hard and tight to loose and sucrosic, brown to light yellow brown, secondary Pyrite observed

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4960	950-70	0,62	93% Claystone, grey 4% Sand, fine-medium, angular to subrounded, glauconitic 3% Siderite, as above sm.am. Cement; Pyrite aggregates (small crystals), burrowing
K4961	970-90	0,68	100% Claystone, as above sm.am. Calcite, fibrous (occurring greatly as needles), brownish white
K4962	990-1010	0,68	65% additive (nut shells) 35% Claystone, grey
K4963	1010-30	0,71	65% Additive (nutshells) 35% Claystone, grey, partly with sand - sized white calcite fragments (presumably broken columnar crystals) sm.am. Pyrite
K4964	1030-50	0,72	90% Claystone, as above 5% Nutshells 5% Calcite, columnar crystals, white obs. Sandstone, fine, glauconitic, of Calcite crystal-fragments; Siltstone, light grey; Glauconite; Pyrite
K4965	1050-70	0,77	65% Sand, medium to coarse, angular - subrounded, clear some crystal faces, some glauconite, some glassy appearance 25% Claystone, as above sm.am. Calcite, as above, but some more

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
			massive (secondary); Siderite; Pyrite
			10% Nut shells
K4966	1070-90	0,88	70% Claystone, grey, some calcite fragments, some light grey/white
			20% Sand, as above
			sm.am. Calcite, as above, brownish; Siderite, yellowish brown, tight to sucrosic
			10% Nut shells
K4967	1090-1110	0,66	95% Claystone, grey, obs glauconitic Silt/Sand (very fine) lamina, occasionally with calcite fragments (fine sand)
			sm.am. Calcite, as above; Siderite, as above, obs as rods; Pyrite; Glauconite
			5% Nut shells
K4968	1110-30	0,83	100% Claystone, as above
K4969	1130-50	0,77	90% Claystone, grey, columnar crystallization of brownish clear calcite found as filling of fissure
			10% Siderite (XRD), yellowish brown to brownish light grey, tight to sucrosic
			sm.am. Calcite, white to brownish clear, columnar crystals; Pyrite
K4970	1150-70	0,73	93% Claystone, grey, scattered calcite fragments as above
			7% Siderite, as above

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
			sm.am. Calcite, as above, grading to yellow brown
K4971	1170-90	0,82	95% Claystone, as above 5% Siderite obs. Sandstone, very fine, light grey, glauconitic
K4972	1190-1210	0,85	100% Claystone, as above sm.am. Siderite, as above obs. Glauconite; Pyrite
K4973	1210-30	0,83	90% Claystone, as above, obs lenses of very fine Sand of Calcite fragments (some glauconitic), obs light Silt lamina, obs brown Calcite as filling of fissure 10% Siderite, as above obs. Sandstone, very fine, glauconitic, light grey; Pyrite aggregates
K4974	1230-50	1,06	92% Claystone, grey, some very silty to sandy with glauconite, occasionally white calcite fragments 5% Siltstone to Sandstone, light grey, glauconitic 3% Siderite
K4975	1250-70	0,94	90% Claystone, as above, obs thin white lamina of Silt and some glauconite, obs dark grey 5% Siderite 5% Siltstone to Sandstone, as above sm.am. Calcite crystals, columnar; obs. Pyrite; Glauconite

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4976	1270-90	0,86	95% Claystone, as above, obs bioturbation, obs. lenses/lamina of mainly Calcite fragments and fine sand. Some micaceous and calcareous, obs glauconitic sandstone-laminae with Pyrite 5% Siltstone to Sandstone, obs brown, ?Sideritic sm.am. Siderite; Calcite, as above obs coarse subrounded Sand grain
K4977	1305-20	0,98	86% Claystone, silty, grey, occasionally sandy and some glauconitic, some calcareous, partly with white Calcite crystals, some micaceous. 7% Sandstone, light grey, angular, some glauconitic, slightly calcareous, very fine-fine 7% Siderite, occasionally glauconitic and pyritic, fine to coarsely crystalline, sucrosic (XRD) sm.am. Calcite, fibrous, brownish white, obs as filling of fissures in Claystone; Pyrite; obs Marchasite
K4978	1320-35	1,05	95% Claystone, as above 5% Siderite sm.am. Sandstone
K4979	1335-40	0,91	90% Claystone, as above, glauconitic sandstone to sandy Siltstone lamina, obs white 5% Sandstone, very fine, glauconitic to slightly glauconitic

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
			5% Siderite, yellowish brown, mainly finely crystalline
K4980	1350-65	0,98	88% Claystone as above 5% Sandstone 7% Siderite, obs with secondary white Calcite obs. yellowbrown secondary Calcite; Pyrite
K4981	1365-80	0,97	100% Claystone, grey, as above, obs greenish white sm.am. Siderite, finely crystalline, sucrosic (partly loose); secondary Calcite, coarsely crystalline, yellowbrown; abundant clear fibrous calcite obs. Sandstone, fine, pyritic
K4982	1380-95	1,01	93% Claystone, silty, some micaceous, grey, some light grey, silty and occasionally sandy (glauconitic), obs white, occasionally abundant white Calcite fragments, obs redbrown (scattered Glauconite), 5% Siderite 2% Silt/Sandstone, slightly glauconitic sm.am. Secondary Calcite, white
K4983	1395-1410	1,0	95% Claystone, as above 5% Siderite sm.am. White long Calcite crystals ?biogenic, yellowbrown short ?filling of fissures

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4984	1410-25	0,90	97% Claystone, grey, slightly micaceous, partly calcareous, sandy, occasionally abundant white Calcite crystals, obs redbrown light green, some white and light grey 3% Siderite sm.am. Silt/Sandstone, as above; Pyrite
K4985	1425-40	1,11	100% Claystone, as above sm.am. Siderite, silty Sandstone
K4986	1440-55	1,03	86% Claystone, grey, some light grey and white, obs dark grey, silty, occasionally zones of white Calcite crystal fragments, some micaceous, occ very silty/sandy (glauconitic) parts largely as well defined laminae, some greater parts with white columnar crystals ?biogenic 3% White to clear Calcite crystals/needles to about 5 mm long, most common as single crystals, ?biogenic origin. 7% Siderite, fine crystalline to sucrosic, yellowish brown 5% Silt/Sandstone, light grey, occasionally with brownish Calcite crystals, glauconitic sm.am. Brownish short laths of columnar crystals; Pyrite obs coarse subrounded clear grain; unknown angular clear brittle grain
K4987	1455-70	1,00	95% Claystone, as above 5% Siderite (XRD) sm.am. Sandstone; yellowbrown secondary Calcite

IKU

TABLE NO.: II

WELL NO.: 7119/12-1

Sample	Depth	TOC	Lithology
K4988	1470-85	0,91	97% Claystone, grey, some calcareous, obs light green 3% Siderite sm.am. yellowbrown columnar Calcite laths, 5-6 edges on the crystals (?biogenic)
K4989	1485-1500	1,04	97% Claystone, grey, some light grey, some calcareous, obs redbrown (sandy, glauconitic), greenish light grey sm.am. Silty Sandstone, very fine - fine, glauconitic; Pyrite 3% Siderite, fine - coarse crystalline, yellowish brown and light yellowish brown (very calcareous) sm.am. Calcite crystals
K4990	1500-15	0,96	100% Claystone, as above
K4991	1515-30	0,98	93% Claystone, grey, obs light grey, occasionally sandy (also Calcite) partly cacareous 7% Siderite, light yellowbrown to yellowish brown, finely crystalline sm.am. Sandstone, glauconitic, very fine, silty, obs. clear angular coarse fragment
K4992	1530-45	0,88	92% Claystone, as above 8% Siderite

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5130	1565-80	0,16	95% Claystone, grey to dark grey sm.am. Limestone, sideritic, yellowbrown, hard, occasionally calcareous; Limestone, white, loose; brownish secondary Calcite; Pyrite; obs Glauconite 5% Cement, white.
K5131	1580-95	0,20	82% Claystone, as above 8% Siderite (XRD), hard, greybrown to yellowbrown, obs secondary Calcite, partly calcareous 10% Cement, white.
K5132	1595-1610	1,01	80% Claystone, dark grey to grey, occasionally calcareous 10% Siderite, as above, obs white and brownish Calcite sm.sm. Pyrite, Calcite, light 10% Cement.
K5133	1610-25	1,32	90% Claystone, as above 5% Siderite, as above, some brittle sm.am. Limestone, white; Calcite, light, brownish; Calcite, light grey/clear, coarsely crystalline, Pyrite 5% Cement.
K5134	1625-40	1,39	92% Claystone, grey to dark grey, slightly micromicaceous 8% Siderite, as above sm.am. Calcite, white, brownish, clear; white brittle Limestone; Pyrite

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5135	1640-55	1,25	92% Claystone, as above 8% Siderite sm.am. Calcite, white, clear, light grey.
5136	1655-70	1,36	92% Claystone, as above 8% Siderite, yellowbrown to brown, brittle-hard sm.am. Calcite, light grey, coarsely crystalline, white fibrous, yellowbrown; Pyrite.
K5137	1670-85	1,59 0,67	85% Claystone, as above 15% Siderite, as above, secondary Calcite sm.am. Calcite.
K5138	1685-1700	1,62 0,73	85% Claystone, as above, some light grey 15% Siderite, brownish grey to yellowbrown sm.am. Limestone, white, loose/brittle; Silt/Limestone, light grey
K5139	1700-16	1,40	80% Claystone 5% Siderite 15% Cement, white
K5140	1716-31	1,86	87% Claystone, grey to dark grey, slightly micromicaceous 3% Siderite, obs. white Calcite as filling of fissures (columnar) in contact with Claystone 10% Cement

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5141	1731-46	1,40	88% Claystone, as above, obs light grey/ clear Calcite in fissures 2% Siderite 10% Cement
K5142	1746-61	1,60	95% Claystone, dark grey to grey, slightly micromicaceous sm.am. Siderite; white secondary Calcite 5% Cement
K5143	1761-76	1,60	85% Claystone, as above, slightly pyritic 15% Siderite/Dolomite, greybrown (hard), light yellowbrown (brittle) sm.am. Calcite, clear, brownwhite and grey columnar; Pyrite (rods)
K5144	1776-91	1,79	90% Claystone, as above, obs white Calcite 10% Siderite, brittle and hard, light yellowish grey and yellowish greybrown, obs sharp contact between Claystone and brittle yellowish ?Siderite
K5145	1791-1806	1,76	90% Claystone, as above, with clear Calcite 10% Siderite (XRD), as above, obs with Pyrite sm.am. Limestone, white to grey (coarse); Pyrite
K5146	1806-21	1,87	95% Claystone, as above, some slickensided 5% Siderite sm.am. Calcite, white, clear

IKU

TABLE NO.:II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5147	1821-36	1,73	95% Claystone, dark grey, as above 5% Siderite, with secondary white Calcite obs Coal; Pyrite
K5148	1836-51	1,53	90% Claystone, dark grey, slightly micromicaceous and slickensided 10% Siderite, as above sm.am. Limestone, white; Calcite, grey, clear (columnar)
K5149	1851-66	1,57	93% Claystone, as above 7% Siderite sm.am. Limestone, light grey to grey, coarsely crystalline
K5150	1866-81	1,55	95% Claystone, as above 5% Siderite
K5151	1881-96	1,78	95% Claystone, dark grey, some silty/sandy 5% Siderite
K5152	1896-1911	1,61	97% Claystone, some silty, dark grey, slickensided, obs light grey coarsely crystalline Calcite, slightly micromicaceous 3% Siderite
K5153	1911-26	1,50	100% Claystone, as above sm.am. Siderite
K5154	1926-41	1,59	94% Claystone, dark grey to grey, slightly micromicaceous, some light green, slickensided 3% Siderite, brown, hard, white secondary Calcite

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
			3% Limestone, light grey, white; white Calcite; obs Pyrite
K5155	1941-56	1,52	92% Claystone, as above 8% Siderite
K5156	1956-71	1,70	92% Claystone 8% Siderite sm.am. Calcite, white
K5157	1971-86	1,71	95% Claystone, as above 5% Siderite sm.am. Limestone, white; brownish to white secondary Calcite
K5158	1986-2000	1,86	92% Claystone, as above 8% Siderite, light yellow grey - dark brown, brittle to hard sm.am. grey Calcite; white Limestone
K5159	2000-16	2,22	96% Claystone, dark grey, some browngrey, some micromicaceous, slickensided 4% Siderite sm.am. white Calcite (obs mixed with Pyrite)
K5160	2016-31	2,12	95% Claystone, as above, obs green 5% Siderite, calcareous (XRD), yellowish brown to brown sm.am. Calcite, white
K5161	2031-46	2,07	95% Claystone, as above 5% Siderite, calcareous, brownish light grey to dark greybrown, hard to brittle

IKU

TABLE NO.:II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5162	2046-61	1,78	92% Claystone, dark grey, some micro-micaceous, slickensided 8% Siderite
K5163	2061-76	1,93	96% Claystone, as above, obs light green 4% Siderite sm.am. Calcite, brownish
5164	2076-91	2,36	93% Claystone, as above, with clear calcite filling 7% Siderite sm.am. Calcite, clear/white
K5165	2091-2106	2,44	96% Claystone, dark grey, some micro-micaceous, slickensided, some brownish clayey Siltsone 4% Siderite (XRD) sm.am. Siltstone, light grey, calcareous, slightly brownish, some sandy, as laminae in Claystone
K5166	2106-21	2,10	95% Claystone, as above 5% Calcite/Siderite Limestone, brownish light grey, brittle, hard yellowish brown sm.am. Siltstone, brownish light grey; light grey Siltstone; Pyrite
K5167	2121-36	2,00	93% Claystone, as above 4% Limestone, as above (XRD) 3% Siltstone, light grey sm.am. Calcite, brownish clear

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5168	2136-51	2,01	96% Claystone, as above, with abundant browngrey silty Claystone/ clayey Siltstone-lamina (with kerogen) 4% Siltstone, light grey sm.am. Siderite
K5169	2151-66	2,38	95% Claystone, as above 5% Siltstone, ligth grey/white, brownish sm.am. Siderite; Pyrite
K5170	2166-81	2,17	97% Claystone, as above 3% Sand/Silt-stone, white to light grey, with some kerogen sm.am. Limestone, yellowish brown, some white sm.am. white Calcite
K5171	2181-96	2,34	100% Interlaminated, Claystone, dark grey to grey & browngrey clayey Siltstone to silty Calystone, and some white to brownish thin Sand/silt-lamina sm.am. Siderite, yellowish brown
K5172	2196-2211	2,38	100% Claystone, as above sm.am. Pyrite
K5173	2211-26	2,03	100% Claystone, as above, some slickensided sm.am. Siderite; white secondary Calcite
K5174	2226-41	2,25	97% Claystone, as above 3% Siderite, (light) yellowbrown, some loose light yellowgrey sm.am. Calcite, light grey, associated with Claystone

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5175	2241-56	1,91	100% Claystone, as above sm.am. Siderite, as above
K5176	2256-71	2,00	85% Claystone, as above 15% Siderite grading to sandy siltstone, loose to hard, greybrown (XRD)
5177	2271-86	2,28	95% Claystone, as above 9% Siderite, hard to loose, brownish 3% Siltstone, sandy, light browngrey
K5178	2286-2301	2,51	100% Claystone, dark grey to grey, some brownish sm.am. Siderite
K5179	2301-16	2,95	100% Claystone, as above sm.am. Siderite
K5180	2316-31	2,93	100% Claystone, dark grey to grey sm.am. Siderite, hard to brittle, yellow-brown, some loose yellowish light grey; sandy Siltstone, browngrey; obs Pyrite
K5181	2331-46	2,08	95% Claystone, as above 5% Siderite light yellow-brown to brown, hard to brittle, loose light yellowbrown
K5182	2346-61	2,20	95% Claystone, as above 5% Siderite, as above

IKU

TABLE NO.:II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5183	2361-76	1,96	100% Claystone, as above sm.am. Siderite
K5184	2376-91	1,54	100% Claystone, dark grey sm.am. Siderite obs Pyrite
K5185	2391-2406	1,39	100% Claystone, dark grey sm.am. Siderite, brown, hard
K5186	2406-21	1,34	100% Claystone, as above sm.am. Siderite obs Calcite, light grey/clear
K5187	2421-36	1,41	97% Claystone 3% Siderite (XRD), yellowish brown to greybrown, hard to brittle, tight, sucrosic, loose light yellowgrey
K5188	2436-51	2,99	97% Claystone, as above, some grey, slightly micromicaceous 3% Siderite, dark brown hard, yellowbrown brittle, loose yellow
K5189	2451-66	2,83	97% Claystone, as above 3% Siderite, as above obs Calcite, brownish, columnar; Pyrite
K5190	2466-81	1,82	90% Claystone, dark grey to grey 7% Siderite 3% Siltstone, light grey and brownish, some micaceous Claystone, light grey

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5191	2481-96	1,43	85% Claystone, as above 15% Limestone, yellowish light grey, Calcite/Siderite grading to Siderite, brittle sm.am. Limestone, white to light grey; Pyrite
K5192	2496-2511	1,23	98% Claystone, as above 2% Limestone, yellowish light grey, as above
K5193	2511-14	2,24	100% Claystone, dark grey (brownish)
K5247	2515-30	3,20	100% Claystone, silty, dark grey grading to dark browngrey and black variably micromicaceous, partly some fissile sm.am. Siderite, browngrey, hard; sandy Siltstone, light grey, micaceous; obs Sandstone, clear, fine, hard, silica cemented
K5248	2530-45	3,14	100% Claystone, as above Contaminated by steel (oxidized)
K5249	2545-60	2,76	100% Claystone, brownish dark grey, some micromicaceous, some fissile, some browngrey, grey sm.am. yellowish grey Siderite, sucrosic; brownish light grey Clay/Siltstone, calcareous; secondary yellowish brown Siderite
K5250	2560-75	4,24	100% Claystone, as above
K5251	2575-90	4,77	100% Claystone, brownish dark grey, more or less micromicaceous and fissile

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5152	2590-2605	8,22	100% Claystone, as above
K5253	2605-20	3,55	87% Claystone, dark to greybrown, some black, some micromicaceous and fissile obs grey 3% Siderite, light greybrown to brown, hard to brittle, occ pyritic 10% Cement & Mud sm.am. Pyrite
K5254	2620-35	2,28	80% Claystone, as above 15% Siderite, as above, with some white filling of ?Dolomite 5% Mud and Cement Contaminated by steel
K5255	2635-50	1,81 0,54	75% Claystone, as above obs grey 25% Siderite, dolomitic (XRD), tight, hard, greybrown, brownish (yellow) light grey (pyritic), obs druses with clear ?Dolomite crystals sm.am. Coal; white ?Dolomite; Pyrite; Cement
K5256	2650-65		85% Sand/Sandstone, fine to medium, angular, slightly brownish white, low porosity 15% Claystone, as above sm.am. Coal; Pyrite; white Silt Siderite

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5257	2665-80	2,66	75% Sand/Sandstone, as above 25% Claystone, dark grey, partly brownish, some grey, some silty, partly some micromicaceous, obs interlamination with Sandstone sm.am. Coal; Siderite; Silt
K5258	2690-2705		100% Sandstone, as above sm.am. white Silt, strong Quartz reflection (XRD) and ?Feldspar
K5259	2705-20	2,95	65% Claystone, dark grey to browngrey, some grey, some fissile and micro-micaceous 35% Sand/Sandstone, as above, angular to subangular, some subrounded medium Sand
K5260	2775-90	3,41	100% Claystone, as above
K5261	2791-2805		95% Sand/Sandstone, fine to coarse, angular to subangular, obs coarse subrounded, slightly brownish clear 5% Claystone sm.am. Silt
K5262	2845-60	1,84	85% Claystone, dark grey to grey, some browngrey 15% Sand/Sandstone sm.am. Silt
K5263	2860-75	1,95	100% Claystone, as above sm.am. Sandstone/Sand

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5264	2890-2905	3,93	97% Claystone, dark grey to browngrey (obs fissile Siltstone, laminated), slightly micromicaceous 3% Coal sm.am. Sandstone, occ with Mica lamina
5265	2905-20		95% Sandstone, very fine to medium, white, angular to subangular 5% Claystone, dark grey (brownish) sm.am. Sandstone, very fine, light browngrey, micaceous; Coal; obs Silt
K5266	2920-35	3,72	30% Claystone, dark grey grading to browngrey and black, some micromicaceous 70% Sandstone, as above, some micaceous sm.am. Coal; Silt
K5267	2938-53	3,81	70% Sandstone, very fine, white, occasionally brownish very micaceous silty 15% Claystone, as above 15% Silt, white sm.am. Coal
K5268	2953-68		15% Silt, white (only weak Quartz by XRD), mainly amorphous? ? volcanic 67% Sandstone, very fine to fine 15% Claystone, as above 3% Coal
K5270	3010-25		70% Sandstone, white to brownish, very fine to fine, angular - subangular, some lamina very micaceous and with Coal particles, obs with white Silt matrix

IKU

TABLE NO.: II

WELL NO.: 7919/12-1

Sample	Depth	TOC	Lithology
		2,92	30% Claystone, dark grey to black and brownish, some micaceous, obs very micaceous and glauconitic
			obs Coal; hard Limestone of ?Siderite and Calcite, pyritic
K5271	3025-40		92% Sandstone, as above
		12,79	8% Claystone, as above, with some laminae of sandy Siltstone (micaceous), obs interlamination with Sandstone
			sm.am. Silt; Coal
K5272	3040-55		93% Sandstone, as above, but fine to medium, partly some micaceous, some browngrey fine micaceous
		2,0	4% Claystone, as above, some very silty lamina
			3% Silt
			sm.am. Coal
K5273	3055-70		100% Sandstone, as above, but dominating fine
			sm.am. Claystone; Coal; Silt
K5274	3070-85		92% Sandstone and Sand, fine to medium, angular white/clear, some brownish very fine silty
		15,40	8% Claystone, black to brownish dark grey, carbonaceous, fissile some dark greybrown
			sm.am. Coal;

IKU

TABLE NO.II

WELL NO.:7919/12-1

Sample	Depth	TOC	Lithology
K5275	3085-88	23,10	75% Sandstone, fine - medium, slightly micaceous, white, some slightly brownish 18% Carbonaceous Claystone grading to Coal, silty, interlaminated with Sandstone, black, partly micaceous, brownish, some fissile 7% Coal

IKU

T A B L E : III

WEIGHT OF EOM AND CHROMATOGRAPHIC FRACTIONS

IKU-No	DEPTH (m)	Rock Extr. (g)	EOM (mg)	Sat. (mg)	Aro. (mg)	HC (mg)	Non HC (mg)	TOC (%)
K-4974	1230	50.8	8.5	1.2	1.7	2.9	5.6	1.0
K-4978	1320	50.1	31.4	12.1	5.3	17.4	14.0	1.1
K-4985	1425	46.8	48.5	3.2	1.6	4.8	43.7	.9
K-5134	1625	52.9	19.9	9.7	3.0	12.7	7.2	1.3
K-5137	1670	28.6	15.9	5.9	2.2	8.1	7.8	1.6
K-5144	1776	34.0	22.0	8.0	1.9	9.9	12.1	1.6
K-5151	1881	50.6	18.9	6.2	3.0	9.2	9.7	1.6
K-5158	1986	52.7	22.0	12.0	2.6	14.6	7.4	1.9
K-5164	2076	52.6	112.9	36.6	28.1	64.7	48.2	2.5
K-5169	2151	50.0	31.4	9.1	4.9	14.0	17.4	2.3
K-5172	2196	50.0	140.1	5.4	3.8	9.2	130.9	2.2
K-5176	2256	50.2	78.2	31.7	12.9	44.6	33.6	2.0
K-5179	2301	50.1	93.4	31.4	22.3	53.7	39.7	3.1
K-5182	2346	50.1	46.3	12.2	8.2	20.4	25.9	2.3
K-5188	2436	50.0	36.0	5.4	6.4	11.8	24.2	3.0
K-5191	2481	50.2	30.5	12.8	5.0	17.8	12.7	1.3
K-5193	2511	48.6	173.0	53.5	34.5	88.0	85.0	3.7

IKU

T A B L E : IV.

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(Weight ppm of rock)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-4974	1230	167	24	33	57	110
K-4978	1320	627	242	106	347	279
K-4985	1425	1036	68	34	103	934
K-5134	1625	376	183	57	240	136
K-5137	1670	556	206	77	283	273
K-5144	1776	647	235	56	291	356
K-5151	1881	374	123	59	182	192
K-5158	1986	417	228	49	277	140
K-5164	2076	2146	696	534	1230	916
K-5169	2151	628	182	98	280	348
K-5172	2196	2802	108	76	184	2618
K-5176	2256	1558	631	257	888	669
K-5179	2301	1864	627	445	1072	792
K-5182	2346	924	244	164	407	517
K-5188	2436	720	108	128	236	484
K-5191	2481	608	255	100	355	253
K-5193	2511	3560	1101	710	1811	1749

IKU

T A B L E : V

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(mg/g TOC)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-4974	1230	17.1	2.4	3.4	5.8	11.2
K-4978	1320	57.0	22.0	9.6	31.6	25.4
K-4985	1425	113.9	7.5	3.8	11.3	102.6
K-5134	1625	29.2	14.2	4.4	18.6	10.6
K-5137	1670	35.2	13.1	4.9	17.9	17.3
K-5144	1776	39.5	14.3	3.4	17.8	21.7
K-5151	1881	23.6	7.8	3.8	11.5	12.1
K-5158	1986	22.2	12.1	2.6	14.7	7.5
K-5164	2076	86.5	28.1	21.5	49.6	36.9
K-5169	2151	27.2	7.9	4.2	12.1	15.1
K-5172	2196	126.2	4.9	3.4	8.3	117.9
K-5176	2256	79.1	32.1	13.0	45.1	34.0
K-5179	2301	60.5	20.3	14.5	34.8	25.7
K-5182	2346	40.9	10.8	7.2	18.0	22.9
K-5188	2436	23.7	3.6	4.2	7.8	15.9
K-5191	2481	45.7	19.2	7.5	26.7	19.0
K-5193	2511	97.0	30.0	19.3	49.3	47.7

IKU

T A B L E : VI

COMPOSITION IN % OF THE MATERIAL EXTRACTED FROM THE ROCK

IKU-No	DEPTH (m)	Sat / EOM	Aro / EOM	HC / EOM	Sat / Aro	Non HC / EOM	HC / Non HC
K-4974	1230	14.1	20.0	34.1	70.6	65.9	51.8
K-4978	1320	38.5	16.9	55.4	228.3	44.6	124.3
K-4985	1425	6.6	3.3	9.9	200.0	90.1	11.0
K-5134	1625	48.7	15.1	63.8	323.3	36.2	176.4
K-5137	1670	37.1	13.8	50.9	268.2	49.1	103.8
K-5144	1776	36.4	8.6	45.0	421.1	55.0	81.8
K-5151	1881	32.8	15.9	48.7	206.7	51.3	94.8
K-5158	1986	54.5	11.8	66.4	461.5	33.6	197.3
K-5164	2076	32.4	24.9	57.3	130.2	42.7	134.2
K-5169	2151	29.0	15.6	44.6	185.7	55.4	80.5
K-5172	2196	3.9	2.7	6.6	142.1	93.4	7.0
K-5176	2256	40.5	16.5	57.0	245.7	43.0	132.7
K-5179	2301	33.6	23.9	57.5	140.8	42.5	135.3
K-5182	2346	26.3	17.7	44.1	148.8	55.9	78.8
K-5188	2436	15.0	17.8	32.8	84.4	67.2	48.8
K-5191	2481	42.0	16.4	58.4	256.0	41.6	140.2
K-5193	2511	30.9	19.9	50.9	155.1	49.1	103.5

IKU

T A B L E : III

WEIGHT OF EOM AND CHROMATOGRAPHIC FRACTIONS

IKU-No	DEPTH (m)	Rock Extr. (g)	EOM (mg)	Sat. (mg)	Aro. (mg)	HC (mg)	Non HC (mg)	TOC (%)
K-5247	2515	92.5	311.2	120.3	64.8	185.1	126.1	3.0
K-5249	2545	41.8	175.9	64.6	32.0	96.6	79.3	3.0
K-5251	2575	34.9	191.6	66.5	35.7	102.2	89.4	6.1
K-5252	2590	40.2	268.0	32.4	21.3	53.7	214.3	9.0
K-5254	2620	40.1	58.5	16.8	8.3	25.1	33.4	2.4
K-5259	2705	13.4	43.8	12.1	9.0	21.1	22.7	2.5
K-5260	2775	48.0	123.3	33.1	21.7	54.8	68.5	2.5
K-5262	2845	17.6	44.7	14.5	9.1	23.6	21.1	2.1
K-5264	2890	68.9	273.9	42.9	21.9	64.8	209.1	3.1
K-5266	2920	26.1	112.9	7.3	10.8	18.1	94.8	4.0

IKU

T A B L E : IV

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(Weight ppm of rock)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-5247	2515	3364	1301	701	2001	1363
K-5249	2545	4208	1545	766	2311	1897
K-5251	2575	5490	1905	1023	2928	2562
K-5252	2590	6667	806	530	1336	5331
K-5254	2620	1459	419	207	626	833
K-5259	2705	3269	903	672	1575	1694
K-5260	2775	2569	690	452	1142	1427
K-5262	2845	2540	824	517	1341	1199
K-5264	2890	3975	623	318	940	3035
K-5266	2920	4326	280	414	693	3632

IKU

T A B L E : V

CONCENTRATION OF EOM AND CHROMATOGRAPHIC FRACTIONS

(mg/g TOC)

IKU-No	DEPTH (m)	EOM	Sat.	Aro.	HC	Non HC
K-5247	2515	111.0	42.9	23.1	66.0	45.0
K-5249	2545	142.2	52.2	25.9	78.1	64.1
K-5251	2575	89.9	31.2	16.7	47.9	41.9
K-5252	2590	74.2	9.0	5.9	14.9	59.4
K-5254	2620	60.3	17.3	8.6	25.9	34.4
K-5259	2705	129.7	35.8	26.7	62.5	67.2
K-5260	2775	103.6	27.8	18.2	46.0	57.5
K-5262	2845	122.7	39.8	25.0	64.8	57.9
K-5264	2890	127.0	19.9	10.2	30.0	97.0
K-5266	2920	107.9	7.0	10.3	17.3	90.6

IKU

T A B L E : VI

COMPOSITION IN % OF THE MATERIAL EXTRACTED FROM THE ROCK

IKU-No	DEPTH (m)	Sat / EOM	Aro / EOM	HC / EOM	Sat / Aro	Non HC / EOM	HC / Non HC
K-5247	2515	38.7	20.8	59.5	185.6	40.5	146.8
K-5249	2545	36.7	18.2	54.9	201.9	45.1	121.8
K-5251	2575	34.7	18.6	53.3	186.3	46.7	114.3
K-5252	2590	12.1	7.9	20.0	152.1	80.0	25.1
K-5254	2620	28.7	14.2	42.9	202.4	57.1	75.1
K-5259	2705	27.6	20.5	48.2	134.4	51.8	93.0
K-5260	2775	26.8	17.6	44.4	152.5	55.6	80.0
K-5262	2845	32.4	20.4	52.8	159.3	47.2	111.8
K-5264	2890	15.7	8.0	23.7	195.9	76.3	31.0
K-5266	2920	6.5	9.6	16.0	67.6	84.0	19.1

IKU

TABLE NO.: VII

WELL NO.: 7119/12-1

TABULATION OF DATAS FROM THE GASCHROMATOGRAMS

Sample	Depth	Pristane/nC_{17}	Pristane/Phytane	CPI
K-4974	1230	1.0	2.1	1.6
K-4978	1320	0.7	2.2	1.1
K-4985	1425	0.6	2.0	1.2
K-5134	1625	0.6	2.2	1.1
K-5137	1670	0.6	2.3	1.1
K-5144	1776	0.6	2.6	1.0
K-5151	1881	0.6	3.0	1.1
K-5158	1986	0.6	2.5	1.8
K-5164	2076	1.0	3.0	1.4
K-5169	2151	1.1	3.5	1.1
K-5172	2196	1.1	4.1	1.2
K-5176	2256	0.8	2.5	1.2
K-5179	3201	1.0	3.6	1.1
K-5182	2346	0.8	4.5	1.2
K-5188	2436	0.7	4.0	0.9
K-5191	2481	0.8	3.2	1.1
K-5193	2511	0.8	3.1	0.9
K-5247	2515	0.8	2.8	1.1
K-5249	2545	0.7	2.4	0.9
K-5251	2575	0.8	2.4	1.0
K-5252	2590	0.7	2.7	1.0
K-5254	2620	0.4	3.2	1.1
K-5259	2705	0.5	2.2	0.7
K-5260	2775	0.5	2.3	0.9
K-5262+63	2845+2860	0.5	2.2	1.2
K-5264	2890	0.6	2.4	0.9
K-5266	2920	0.7	2.7	1.0

IKU

TABLE NO.: VIII

VITRINITE REFLECTANCE MEASUREMENTS

WELL NO.: 7119/12-

Sample	Depth	Vitrinite reflectance	Fluorescence in UV light	Exinite content
K 4951	770	0.44(7)	Yellow/orange	Trace
K 4957	890	0.42(5)	Yellow/orange	Trace
K 4963	1010	0.34(6)	Yellow/orange	Low
K 4966	1070	0.35(12)	Yellow-Mid. orange	Low-Moderate
K 4969	1130	0.37(10)	Yellow/orange	Low
K 4972	1190	0.37(13)	Yellow/orange	Low
K 4974	1230	0.38(15)	Yellow/orange	Low-Moderate
K 4978	1320	0.38(11)	Yellow/orange	Low-Moderate
K 4982	1380	0.39(6)	Yellow/orange-Mid. orange	Moderate
K 4985	1425	0.35(10),0.57(2)	Yellow/orange	Moderate
K 4989	1485	0.43(5)	Yellow/orange	Low
K 4992	1530	0.41(1)	Yellow/orange	Low-Moderate
K 5134	1625	0.43(5)	Mid. orange	Moderate
K 5137	1670	0.48(6)	Mid. orange	Low-Moderate
K 5138	1685	0.45(21)	Mid. orange	Low
K 5144	1776	0.42(16),0.66(5)	Light-Mid. orange	Moderate
K 5151	1881	0.41(16),0,61(2)	Yellow-Light orange	Moderate
K 5157	1971	0.44(12)	Yellow-Light orange	Low-Moderate
K 5164	2076	0.52(14)	Light-Mid. orange	Moderate
K 5168	2136	0.49(20)	Mid. orange	Moderate
K 5172	2196	0.58(20),0.86(1)	Mid. orange	Moderate
K 5176	2256	0.51(18)	Mid. orange	Moderate
K 5179	2301	0.58(20)	Mid. - deep orange	Low
K 5182	2346	0.57(19)	Light + Mid. orange	Moderate
K 5188	2436	0.62(20)	Deep orange	Trace
K 5191	2481	0.62(22)	Mid. - deep orange	Low-Moderate
K 5193	2511	0.53(20)	Mid/deep orange	Moderate-rich
K 5248	2530-45	0.53(13)	Deep orange	Low
K 5250	2560-75	0.60(20)	Mid. orange	Low
K 5252	2590-2605	0.62(21)	Mid. orange	Moderate
K 5257	2665-80	0.60(21)	Deep orange	Low

IKU

TABLE NO.: VIII

VITRINITE REFLECTANCE MEASUREMENTS

WELL NO.:7119/12-1

Sample	Depth	Vitrinite reflectance	Fluorescence in UV light	Exinite content
K 5259	2705-20	0.66(20)	Mid. to deep orange	Low-Moderate
K 5260	2775-90	0.76(20)	Mid. to deep orange	Moderate
K 5262	2845-60	0.85(22)	Deep orange	Low
K 5264	2980-2905	0.31(9),0.73(13)	Deep orange	Moderate
K 5267	2938-53	0.85(22)	Orange-red	Moderate
K 5270	3010-25	0.83(20)	Deep orange	Low
K 5275	3085-88	1.15(23)	-	-

IKU

TABLE NO.: IX

VISUAL KEROGEN ANALYSIS

WELL NO.: 7119/12-1

Sample	Depth	Composition of residue	Particle size	Preservation - palynomorphs	Thermal maturation index	Remarks
K 4951	770-790	Am,Cy/He,W,P	F	fair	1+/2-	Aggregates, pyrite
K 4957	890-910	Am,Cy/He,W,P,S	F	good	1+/2-	Aggregates, much pyrite
K 4963	1010-1030	Am,Cy/W,He,Cut,P	F-M	good	1+/2-	Rich in cysts, pyrite
K 4966	1070-1090	Am,Cy/W,He,Cut,P,S	F-M-L	good	1+/2-, 2/2+	Mud additives, pyrite, caved material
K 4969	1130-1150	Am,Cy/W,He,P	F-M	good	1+/2-, 2+/3	Mud additives, pyrite, caved material
K 4972	1190-1210	Am,Cy/He,Cut,W	F-M-L	good	2/2+	Increased colouring of cysts, a lot of pyrite
K 4974	1230-1250	Am,Cy/He,W,P,S	F-M	good	2/2+	A lot of pyrite
K 4978	1320-1335	Am,Cy/He,W,P,S	F-M	good	1+/2-, 2+	Caved amorphous mat. suspected
K 4982	1380-1395	Am,Cy/He,W,P	F-M	good	1+/2-, 2+/3-	Caved material present or suspected in most samples from 1380 to 1545 m.
K 4985	1425-1440	Am,Cy/He,W,P	F-M	good	2-/2	
K 4989	1485-1500	Am,Cy/He,W,P	F-M	good	2-/2	
K 4992	1530-1545	Am,Cy/He	F	good	2-/2	

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

TABLE NO.: IX

VISUAL KEROGEN ANALYSIS

WELL NO.: 7119/12-1

Sample	Depth	Composition of residue	Particle size	Preservation - palynomorphs	Thermal maturation index	Remarks
K 5134	1625-40	He,W,Cut,P,S/Am,Cy	F-M-L	good to fair	2-/2	Pyrite
K 5137	1670-85	Am,Cy/He,W,Cut,P	F-M	fair to good	2-/2	Aggregates present
K 5138	1685-1700	Am,Cy/He,W,P,S	F-M	fair to good	2	
K 5145	1776-91	Am,Cy/He,WR!'W,P,S	F-M	poor to fair	2-/2	
K 5151	1881-96	Am,Cy/He,Cut,WR!,W,P,S	F-M-L	fair and good	2-/2 and 2/2+	
K 5157	1971-86	Am,Cy/He,Cut,W,P,S,WR!	F-M-L	fair	2	
K 5164	2076-91	Am,Cy/W,Cut,He,P,S,WR!	F-M-L	good to fair	2/2+	
K 5168	2136-51	Am,Cy/W,WR!,He,Cut,P,S	F-M	fair to good	2+	
K 5172	2196-2211	Am,Cy/He,W,Cut,S,P	F-M	fair to good	2+	Caved material suspected
K 5176	2256-2271	Am,Cy/W,He,P,S	F	good	2+	Fungi
K 5179	2301-2316	Am,Cy/He,W,P,S	F-M	fair to poor	2+/3-	Increase in amount of sapropel
K 5182	2346-2361	Am,Cy/W,P	F	fair to good	2+/3-	Pyrite, caved material suspected
K 5188	2436-2451	Am,Cy/He,P,S	F	good to fair	2+/3-	Pyrite in abundance, aggregates
K 5191	2481-2496	Am,Cy/He,WR!,W,P,S	F	fair to good	2+/3-	Sapropelization
K 5193	2511-2514	Cut,He,P/Am	F-M-L	poor	3-	Aggregates, sapropelization

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

TABLE NO.: IX

VISUAL KEROGEN ANALYSIS

WELL NO.: 7119/12-1

Sample	Depth	Composition of residue	Particle size	Preservation - palynomorphs	Thermal maturation index	Remarks
K 5247	2525-30	Cut,He,P/Am,Cy	F-M-L	poor to fair	2+/3-	Extremely poor preservation. Sapropelized terrestrial remains dominated and enclosed pyrite bodies and palynomorphs. Aggregates.
K 5249	2545-60	Cut,He/Am	F-M-L	poor	3-	
K 5251	2575-90	Cut,He/Am	F-M-L	poor	3-	
K 5252	2590-2605	Cut,He/Am	F-M-L	poor	3-	
K 5254	2620-35	Am/W,He,S	F-M	very poor	2+/3-, 3-	
K 5260	2775-90	He,Cut,W,S/Am	F-M-L	very poor	2+/3-, 3-	
K 5264	2980-2905	Cut,He/W,P/Am	F-M-L	very poor	2+/3-, 3-	
K 5267	2938-53	He,Cut,W,P/Am	F-M-L	very poor	2+/3-, 3-	

ABBREVATIONS

Am	amorphous	Cy	cysts, algae	W	woody material	F	fine
He	herbaceous	P	pollen grains	C	coal	M	medium
Cut	cuticles	S	spores	R!	reworked	L	large

IKU

TABLE NO.: X

WELL NO.:7119/12-1

ROCK – EVAL PYROLYSES

Sample	Depth	S_1	S_2	S_3	C_{org}	Hydrogen Index	Oxygen Index	Petroleum potential (S_1+S_2)	Production Index S_1/S_1-S_2	T_{max} °C
K 4974	1230-50	0.05	0.94	0.99	1.06	89	93	0.99	0.05	430°
K 4978	1320-35	0.07	0.30	1.47	1.05	29	140	0.37	0.19	439°
K 4985	1425-40	0.08	0.74	1.46	1.11	67	132	0.82	0.10	426°
K 5134	1625-40	0.15	1.53	2.17	1.39	110	156	1.68	0.09	429°
K 5144	1776-91	0.20	2.50	3.18	1.79	140	178	2.70	0.07	426°
K 5151	1881-96	0.10	1.88	3.18	1.78	106	179	1.98	0.05	438°
K 5158	1986-2000	0.32	1.14	2.45	1.86	61	132	1.46	0.22	439°
K 5164	2076-91	0.48	4.51	2.22	2.36	191	94	4.99	0.10	432°
K 5169	2151-66	0.21	1.70	2.27	2.38	71	95	1.91	0.11	443°
K 5172	2196-2211	0.24	1.34	1.63	2.38	56	68	1.58	0.15	436°
K 5176	2256-71	0.60	2.14	2.17	2.00	107	109	2.74	0.22	438°
K 5179	2301-16	0.06	0.54	1.50	2.95	18	51	0.60	0.10	434°
K 5182	2346-61	0.06	0.56	1.56	2.20	26	71	0.62	0.10	434°
K 5188	2436-51	0.39	1.51	1.69	2.99	51	57	1.90	0.21	447°
K 5191	2481-96	0.15	0.57	1.62	1.43	40	113	0.72	0.21	444°
K 5193	2511-14	0.48	3.23	1.71	2.24	144	76	3.71	0.13	448°

IKU

TABLE NO.: X

WELL NO.:7119/12-1

ROCK – EVAL PYROLYSES

Sample	Depth	S_1	S_2	S_3	C_{org}	Hydrogen Index	Oxygen Index	Petroleum potential (S_1+S_2)	Production Index S_1/S_1-S_2	T_{max} °C
K 5247	2515-30	1.69	3.60	1.79	3.20	113	56	5.29	0.32	451°
K 5249	2545-60	0.92	1.92	2.06	2.76	70	75	2.84	0.32	455°
K 5251	2575-90	2.55	6.03	1.41	4.77	126	30	8.58	0.30	450°
K 5252	2590-2605	3.76	11.23	1.55	8.22	137	19	14.99	0.25	457°
K 5254	2620-35	0.68	1.58	1.92	2.28	69	84	2.26	0.30	457°
K 5259	2705-20	1.38	3.18	1.71	2.95	108	58	4.56	0.30	452°
K 5260	2775-90	1.81	5.32	1.71	3.41	162	50	7.33	0.25	453°
K 5262	2845-60	1.29	3.12	1.31	1.84	170	17	4.41	0.29	453°
K 5263	2860-75	1.71	5.91	1.45	1.95	303	74	7.62	0.22	454°
K 5264	2890-2905	2.42	5.59	2.34	3.93	142	60	8.01	0.30	454°
K 5266	2920-35	2.41	1.59	1.42	3.72	43	38	4.00	0.60	453°
K 5267	2938-53	1.85	5.73	1.03	3.81	150	27	7.58	0.24	455°
K 5271	3025-40	1.27	3.17	0.75	12.79	25	6	4.44	0.29	459°
K 5272	3040-55	1.23	3.14	1.09	2.00	157	55	4.37	0.28	452°
K 5274	3070-85	4.09	24.03	1.47	15.40	156	10	28.12	0.15	460°
K 5275	3085-88	5.38	34.86	1.77	23.10	151	8	40.24	0.13	462°