
36 " HOLE

Details

30" casing at:	223.0	m
36" hole drilled from:	161.0	m
to:	227.0	m
Cost for section:	58 650.0	NOK
Cost pr meter:	888.6	NOK

Comments

Prior to spud in we prehydrated 227 m³ of gel mud with viscosity above 100 sec/quart. The 36" hole was drilled with a 17 1/2" bit followed by 26" and 36" hole opener. The hole was drilled from seabed at 161 m to a total depth of 227 m using seawater and 5 m³ high viscosity pills of gel mud at connections. At TD the hole was displaced to mud before a wiper trip. Back on bottom, 78 m³ of mud was pumped.

The 30" casing was run and cemented in place without problems, with the casing shoe at 222 m. About 26 hours of rig time was spent WOW during this section.

26 " HOLE

Details

20" casing at:	364.0	m
26" hole drilled from:	223.0	m
to:	368.0	m
Cost for section:	72 930.0	NOK
Cost pr meter:	503.0	NOK

Comments

The 26" hole was drilled without riser using a 17 1/2" bit and 26" hole opener. The cement, 30" casing shoe and the 26" hole were drilled with seawater and 5 m³ gel-mud pills every 10 metres. The hole was drilled to TD at 368 m without problems. The hole was then displaced to gel mud before making a wiper trip. At bottom again 40 m³ gel mud was pumped before displacing the hole to 1.20 s.g. gel mud.

The 20" casing was run and cemented in place with no problems at a depth of 363 m.

17 1/2 " HOLE

Details

13 3/8" casing at:	1610.0	m
17 1/2" hole drilled from:	364.0	m
to:	1625.0	m
Cost for section:	582 026.8	NOK
Cost pr meter:	461.5	NOK

Comments

Before the start of the 17.5" section, all available pit space (300 m³) was used to prepare Newdrill/Pac polymer mud. The fluid was sheared for 6 hours and weighted to 1.10 sg. Due to problems with the BOP, the fluid remained unused for 16 days. But from visual tests with Panatest Dipslides, there were no bacterial attack.

The hole was drilled from 364 m to TD at 1625 m in 3.5 days. When drilling ahead the mudweight was raised to 1.20 sg between 800 m and 900 m by adding polymer kill-mud from previous section. The hole was found to be in good condition both at a wiper trip at 1031 m and at a bit trip at 1218 m.

When pulling out after reaching TD, the hole was tight and reaming back down from about 1200 m to bottom was done. When pulling out again the hole was good and the logging proceeded without problems. After a clean-up trip to bottom, the 13 3/8" casing was run, but got differential stuck at 1412 m depth. The mud weight was reduced from 1.20 to 1.12 sg. and an IMCO-spot pill was placed from the bottom of the casing and 250 m up in the annulus. After 4 hours the casing got loose, and was then pulled. Then a new trip was done, reaming and washing down to bottom. Heavy mud from bottom of the hole was treated back to 1.13 sg. The casing was rerun without any further problems.

Mud treated with zinc carbonate (Milgard) was placed behind the casing followed with cement.

As drilling this section we experienced large mud loss over the bottom screens on all shakers, due to large build-up of cuttings on the bottom screens. The cuttings would not climb up the bottom front screens as they do with the cuttings generated in an oil mud environment. We started with a screen configuration 20/84, 20/52, 20/84, but had to changed all to 52 mesh on the bottom. "Squeegys" were first used to scrape the build up of clays off the bottom screens, this however easily damaged the screens. It turned out that with the larger mesh screens it was better to use high pressure water hoses, which avoided screen damage but caused a lot of the cuttings to be washed into the mud making the need for dilution greater.

The desilters and desander were run continuously and the centrifuge periodically.

The mud was renewed during drilling by slow addition of premix containing 3 ppb of New-drill and 2-3 ppb of Propol SL and/or Propol Reg. The mud showed all the time excellent inhibitive qualities as judged from cuttings, from montmorillonite pellets that stayed more than one day in the mud without swelling, and from the MBT value that stayed below 15 ppb during the whole section.

12 1/4 " HOLE

Details

9 5/8" casing at:	3017.0	m
12 1/4" hole drilled from:	1610.0	m
to:	3034.0	m
Cost for section:	542 460.0	NOK
Cost pr meter:	380.9	NOK

Comments

During drilling out float, cement and shoe, the mudweight was increased from 1,13 sg. to 1,27 sg. The rat hole was cleaned out and 3 meter of new formation drilled. A leak off test was performed to 1,76 sg. equivalent mud density.

The mud was treated with 0,75 ppb bicarbonate prior to drilling cement. The rheology stayed stable after finished drilling cement, however pH and calcium levels increased as expected. These were reduced again as drilling continued by adding more bicarbonate, new mud and old mud from previous section.

As drilling proceeded with 1,27 sg. mudweight, desilter, desander and centrifuge were run continuously. Finest possible shale shaker screens were used, 165/145 bottom and 20/30 top. However after drilling approximately 500 meter, an increase in MBT and gels were noticed and increased dilution with new mud was required to control these properties.

The 12 1/4" hole was drilled to 2935 meter where the mudweight was raised to 1,52 sg. in two circulations. Drilling continued to TD at 3034 meter. After raising the mudweight, rheology was controlled with slow addition of seawater and fluid loss maintained with addition of Propol Superlo. The mud-cleaner was equipped with 2x200 mesh screens and used as additional solids control to the shakers.

Bit trips were made at 2420, 2424 and 2904 meter. Tight hole with necessary reaming was experienced at the same depths on each trip. The troublesome zones were from 1660-1790 m and 2340-2700 m. The cuttings from the zones being reamed were mainly hard dry shale with some splinters.

As pulling out of the hole at reached TD for this section, no drag at all was experienced. The logging was performed without any problems, but the caliper log showed great washout around 2300-2350 m.

Two wipertrips were made prior to pulling out to run the casing. Several tight spots were reamed during the first wipertrip, but as pulling out to run casing no overpull was seen. The casing was run to 3017 m without any problems. The casing volume was circulated and the spacer pumped with full returns, but as mixing/pumping and displacing cement no returns at all was experienced. However, as running logs later the cement top in annulus was found at approximately 1870 m.

Panatest dipslide for bacterial control was run every day. No serious bacterial attack was seen. Also swelling of montmorillonite pellets was checked every day and the mud showed excellent inhibition throughout the whole section. The concentration of NewDrill was kept around 3 ppb when mixing new mud and cuttings at the shakers appeared well coated with polymer. The mud stayed slick and no bit balling was seen. The bit, string and bottom hole assembly were clean whenever pulling out of the hole.

8 1/2 " HOLE

Details

not cased		
8 1/2" hole drilled from:	3017.0	m
to:	3703.0	m
Cost for section:	221 140.0	NOK
Cost pr meter:	322.4	NOK

Comments

The cement, 9 5/8" casing shoe, the rat hole and one meter of formation were drilled with the old 1.55 sg Newdrill/PAC polymer mud from the previous section. The hole was then displaced to lignosulfonate mud of 1.47 sg, 258 m³ of which had been mixed prior to drilling out the cement. The leak off test gave equivalent mud density of 1.85 sg.

The hole was drilled to 3035 m, cored to 3053 m, and then drilled again to TD at 3703 m without problems.

Bit trips were done at 3291, 3472 and 3583 m. The hole was good and no fill on return to bottom. While drilling, the mud properties were maintained by slow additions to active system of prehydrated bentonite, and lignite, lignosulfonate and caustic dissolved in drill water.

The shakers were run with screen sizes: 30/145, 30/165, 30/145. At times the total flow could be taken on the shaker with 165 mesh screen. The shakers worked well in this section with small cuttings volume. The mud cleaner was run with 200 mesh screen.

After drilling the hole, the hole was logged, plugged and abandoned

TOTAL MUD MATERIALS

Well: 33/12-7 Operator: Statoil

Quantity:	Material:	Units:	Unit Price:	Total Cost:
893	Barite	ton	530,00	473 290,00
105	Imco-spot	50 lbs	560,00	58 800,00
10	Milgard	25 kg	511,68	5 116,80
67	NaOH	25 kg	150,00	10 050,00
690	Newdrill	25 kg	675,00	465 750,00
48	Probio II	25 l	470,00	22 560,00
6	Prodefoam	25 l	640,00	3 840,00
227	Prolignite	25 kg	100,00	22 700,00
239	Propol Reg	25 kg	460,00	109 940,00
286	Propol SL	25 kg	460,00	131 560,00
191	Prothin C	25 kg	100,00	19 100,00
109	Soda Ash	25 kg	150,00	16 350,00
46	Sodium Bicarbonate	25 kg	150,00	6 900,00
75	Wyoming bentonite	ton	1 750,00	131 250,00

Total Cost: 1 477 206,80

Depth at TD [m] 3703

Average Cost pr Meter: 417,05

MUD VOLUME SUMMARY

WELL: 33/12-7 OPERATOR: Statoll
 FIG: Deepsea Bergen

Section:	36"	26"	17 1/2"	12 1/4"	8 1/2"
Hole from [m]	161	223	364	1610	3017
Hole to [m]	227	368	1625	3034	3703
Hole length [m]	66	145	1261	1424	686
Mud Type	spud	spud	Newdrill/Pac	Newdrill/Pac	ligno
Vol transfered to interval	0	254	290	430	0
Vol buildt	535	235	715	595	356
Vol transferd to next sect.	254	258	430	0	0
Vol transfered to external		0		0	0
Vol behind casing [cub.m]	20	45	29	115	10
Vol dumped	0	0	409	606	291
Vol lost to sea	201	186	0	0	0
Vol lost to formation	60	0	3	0	0
Vol lost on solids equipment	0	0	134	304	55
Vol cuttings drilled [cub. m]	43,3	42,3	195,7	106,1	51,1
<i>Mud used this section</i>	281	231	575	1025	356
TOTALS					
mud/brine buildt	2436,0		total buildt	2436	
mud/brine dumped	1306,0		total to sea	2186	
mud/brine lost to formation	63,0		total left in hol	282	
mud/brine lost on solids cont.	493,0				
mud/brine behind csg	219,0				
mud/brine left in hole	0,0				
<i>total mud/brine left in hole</i>	219,0				
mud/brine to sea	387,0				
total vol cuttings drilled	438,5				

DAILY DRILLING MUD PROPERTIES, part 1

Page: 1
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjeggstad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Mud Density	Funnel Viscosity	Plastic Viscosity	Yield Point	10 sec 10 min gal	pH	Filtrate API	Filtrate HTHP ml/30min	Filtrate HTHP deg C	Cake Thick-ness 32nd in	Alkal. Mud (Pm) ml	Alkal. Filtrate (Pf) ml
	Unit ->	m	sg	sec/qt	lbs/100lbs	lbs/100lbs	/100 ft		ml/30min	ml/30min				
1989-02-22	23:59	204,0	1,05	0	25	50,00	0,00	0,00	0,0	0,0	0,0	0,0	0,00	0,00
1989-02-23	23:59	223,0	1,05	0	25	50,00	0,00	0,00	0,0	0,0	0,0	0,0	0,00	0,00
1989-02-24	23:59	227,0	1,05	0	25	50,00	0,00	0,00	0,0	0,0	0,0	0,0	0,00	0,00
1989-02-25	23:59	331,0	1,05	0	25	50,00	0,00	0,00	0,0	0,0	0,0	0,0	0,00	0,00
1989-02-27	23:59	368,0	1,10	0	10	8,00	2,00	3,00	8,5	9,8	0,0	0,0	0,15	0,15
1989-02-28	23:59	368,0	1,10	0	11	8,00	2,00	3,00	8,5	9,6	0,0	0,0	0,15	0,15
1989-03-01	12:40	368,0	0,00	0	0	0,00	0,00	0,00	0,0	0,0	0,0	0,0	0,00	0,00
1989-03-01	23:59	368,0	1,10	0	12	9,00	2,00	3,00	8,5	9,2	0,0	0,0	0,15	0,15
1989-03-02	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-03	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,5	0,0	0,0	0,15	0,15
1989-03-04	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-05	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-06	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-07	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-08	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,5	0,0	0,0	0,15	0,15
1989-03-09	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,6	0,0	0,0	0,15	0,15
1989-03-10	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,4	0,0	0,0	0,15	0,15
1989-03-11	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,6	0,0	0,0	0,15	0,15
1989-03-12	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,6	0,0	0,0	0,15	0,15
1989-03-13	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,2	0,0	0,0	0,15	0,15
1989-03-14	23:59	368,0	1,10	0	12	8,00	2,00	3,00	8,5	9,2	0,0	0,0	0,15	0,15
1989-03-15	08:00	442,0	1,10	51	20	16,00	1,00	2,00	8,7	6,0	0,0	0,0	0,20	0,15
1989-03-15	15:00	535,0	1,10	48	13	10,00	1,00	2,00	8,6	5,6	0,0	0,0	0,30	0,05
1989-03-15	16:00	559,0	0,00	47	15	8,00	1,00	2,00	8,5	5,8	0,0	0,0	0,30	0,05
1989-03-15	23:30	751,0	1,10	46	14	8,00	1,00	2,00	8,5	5,2	0,0	0,0	0,15	0,05
1989-03-16	03:00	839,0	1,14	0	12	6,00	1,00	2,00	8,6	4,5	0,0	0,0	0,20	0,05
1989-03-16	16:30	1046,0	1,20	52	0	0,00	1,00	2,00	8,6	4,5	0,0	0,0	0,20	0,05
1989-03-16	16:31	1046,0	1,20	52	17	10,00	1,00	2,00	8,6	4,5	0,0	0,0	0,20	0,05
1989-03-16	23:59	1218,0	1,20	46	16	7,00	1,00	2,00	8,6	4,5	0,0	0,0	0,20	0,05
1989-03-17	09:30	1219,0	1,20	48	17	7,00	1,00	2,00	8,5	4,5	0,0	0,0	0,05	0,07
1989-03-17	10:30	1244,0	1,20	48	16	6,00	1,00	2,00	8,5	4,5	0,0	0,0	0,05	0,07
1989-03-17	16:30	1391,0	1,20	48	16	8,00	1,00	2,00	8,6	4,5	0,0	0,0	0,20	0,10
1989-03-17	23:59	1548,0	1,20	47	21	8,00	2,00	3,00	8,4	4,5	0,0	0,0	0,20	0,05
1989-03-18	04:00	1613,0	1,20	47	16	5,00	1,00	2,00	8,4	4,5	0,0	0,0	0,05	0,05
1989-03-18	05:00	1625,0	1,20	49	17	9,00	1,00	2,00	8,4	4,5	0,0	0,0	0,05	0,05
1989-03-18	09:45	1625,0	1,20	47	14	9,00	1,00	2,00	8,4	4,0	0,0	0,0	0,05	0,07
1989-03-18	23:59	1625,0	1,20	0	16	8,00	1,00	2,00	8,5	4,5	0,0	0,0	0,10	0,10
1989-03-19	10:15	1625,0	1,20	48	18	7,00	1,00	2,00	8,5	4,5	0,0	0,0	0,08	0,10
1989-03-19	11:00	1625,0	1,20	51	17	11,00	1,00	2,00	8,5	4,5	0,0	0,0	0,05	0,10
1989-03-19	23:59	1625,0	1,20	0	15	7,00	1,00	2,00	8,5	4,5	0,0	0,0	0,08	0,10
1989-03-20	08:00	1625,0	1,20	55	12	6,00	1,00	1,00	8,5	4,5	0,0	0,0	0,05	0,10
1989-03-20	12:30	1625,0	1,15	51	18	7,00	1,00	1,00	8,5	4,0	0,0	0,0	0,10	0,10
1989-03-20	14:30	1625,0	1,12	45	18	7,00	1,00	1,00	8,5	4,0	0,0	0,0	0,15	0,10
1989-03-20	23:59	1625,0	1,12	46	12	7,00	1,00	1,00	8,6	4,0	0,0	0,0	0,20	0,10
1989-03-21	23:59	1625,0	1,12	0	17	8,00	1,00	1,00	8,5	4,5	0,0	0,0	0,15	0,10
1989-03-22	06:00	1625,0	1,13	49	15	8,00	1,00	1,00	9,5	4,0	0,0	0,0	0,15	0,05
1989-03-22	07:00	1625,0	1,13	49	19	8,00	1,00	1,00	9,4	4,0	0,0	0,0	0,15	0,05
1989-03-22	23:59	1625,0	1,13	0	12	8,00	1,00	1,00	9,4	4,0	0,0	0,0	0,10	0,05
1989-03-23	23:59	1625,0	1,13	0	12	8,00	1,00	1,00	9,3	4,0	0,0	0,0	0,10	0,05

DAILY DRILLING MUD PROPERTIES, part 1

Page: 2
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjeggstad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Mud Density	Funnel Viscosity	Plastic Viscosity	Yield Point	10 sec gel	10 min gel	pH	Filtrate API	Filtrate HTHE ml/30min	Filtrate temp HTHE deg C	Cake Thick-ness 32nd in	Alkal. Mud (Pm) ml	Alkal. Filtrate (PE) ml
Unit ->		m	sg	sec/qt	lbs/100lbs/100lbs/100 ft			ml/30min							
1989-03-24	18:30	1728,0	1,27	50	19	7,00	1,00	1,00	9,8	4,0	0,0	0,0	1	0,50	0,10
1989-03-24	19:30	1759,0	1,27	50	20	6,00	1,00	2,00	9,8	4,0	0,0	0,0	1	0,50	0,10
1989-03-24	23:30	1810,0	1,27	49	20	8,00	1,00	4,00	9,5	4,0	0,0	0,0	1	0,30	0,05
1989-03-25	04:30	1856,0	1,27	51	20	8,00	1,00	4,00	9,2	4,0	0,0	0,0	1	0,20	0,05
1989-03-25	07:30	1900,0	1,27	54	20	8,00	1,00	6,00	9,0	4,1	0,0	0,0	1	0,20	0,05
1989-03-25	16:30	2058,0	1,27	54	22	7,00	1,00	7,00	9,2	4,2	0,0	0,0	1	0,15	0,05
1989-03-25	17:30	2073,0	1,27	52	20	8,00	1,00	8,00	9,0	4,0	0,0	0,0	1	0,10	0,05
1989-03-25	23:30	2138,0	1,27	53	20	10,00	1,00	9,00	8,5	4,0	0,0	0,0	1	0,10	0,05
1989-03-26	04:30	2182,0	1,27	55	19	11,00	3,00	15,00	8,3	4,0	0,0	0,0	1	0,10	0,05
1989-03-26	09:30	2237,0	1,27	57	20	13,00	4,00	23,00	8,3	4,0	0,0	0,0	1	0,10	0,05
1989-03-26	13:00	2278,0	1,27	51	21	10,00	2,00	14,00	8,6	4,2	0,0	0,0	1	0,05	0,05
1989-03-26	19:30	2345,0	1,27	50	19	11,00	2,00	16,00	8,4	4,0	0,0	0,0	1	0,05	0,05
1989-03-26	23:30	2386,0	1,27	48	19	7,00	1,00	9,00	8,4	4,0	0,0	0,0	1	0,05	0,05
1989-03-27	20:00	2422,0	1,27	49	18	8,00	1,00	5,00	8,4	4,0	0,0	0,0	1	0,05	0,05
1989-03-27	23:30	2424,0	1,27	0	18	7,00	1,00	5,00	8,3	4,1	0,0	0,0	1	0,05	0,05
1989-03-28	08:30	2439,0	1,27	50	15	8,00	2,00	4,00	8,3	4,1	0,0	0,0	1	0,05	0,05
1989-03-28	16:00	2511,0	1,27	48	18	6,00	1,00	6,00	8,4	4,0	0,0	0,0	1	0,05	0,05
1989-03-28	21:30	2573,0	1,27	50	20	8,00	1,00	7,00	8,4	3,8	0,0	0,0	1	0,05	0,05
1989-03-28	22:30	2587,0	1,27	50	21	8,00	1,00	8,00	8,2	3,9	0,0	0,0	1	0,00	0,05
1989-03-29	03:30	2628,0	1,27	51	20	8,00	2,00	10,00	8,2	3,9	0,0	0,0	1	0,00	0,00
1989-03-29	11:00	2682,0	1,27	46	17	7,00	1,00	7,00	8,1	4,0	0,0	0,0	1	0,00	0,00
1989-03-29	18:30	2730,0	1,27	46	20	6,00	1,00	6,00	8,2	4,0	0,0	0,0	1	0,00	0,00
1989-03-29	19:30	2736,0	1,27	45	19	7,00	1,00	5,00	8,1	4,0	0,0	0,0	1	0,00	0,00
1989-03-29	23:00	2760,0	1,27	43	19	6,00	1,00	5,00	8,2	4,0	0,0	0,0	1	0,00	0,00
1989-03-30	04:30	2781,0	1,27	46	16	7,00	1,00	6,00	8,0	4,1	0,0	0,0	1	0,00	0,00
1989-03-30	09:00	2800,0	1,27	44	15	8,00	1,00	6,00	8,1	4,3	0,0	0,0	1	0,00	0,00
1989-03-30	12:30	2821,0	1,27	46	16	7,00	1,00	6,00	8,1	4,0	0,0	0,0	1	0,00	0,00
1989-03-30	14:00	2827,0	1,27	47	15	6,00	1,00	7,00	8,0	4,3	0,0	0,0	1	0,00	0,00
1989-03-30	23:59	2879,0	1,27	44	13	8,00	1,00	7,00	8,2	4,2	0,0	0,0	1	0,00	0,00
1989-03-31	05:00	2901,0	1,27	45	12	8,00	1,00	5,00	8,1	4,2	0,0	0,0	1	0,00	0,00
1989-03-31	06:30	2904,0	1,27	44	12	7,00	1,00	7,00	8,0	4,4	0,0	0,0	1	0,00	0,00
1989-03-31	23:59	2904,0	1,27	0	13	7,00	1,00	6,00	8,0	4,1	0,0	0,0	1	0,00	0,00
1989-04-01	05:00	2906,0	1,28	56	18	14,00	2,00	13,00	7,9	4,2	0,0	0,0	1	0,00	0,00
1989-04-01	08:00	2917,0	1,28	46	15	8,00	3,00	12,00	8,0	4,1	0,0	0,0	1	0,00	0,00
1989-04-01	15:30	2935,0	1,52	48	18	10,00	4,00	18,00	8,0	4,4	0,0	0,0	1	0,00	0,00
1989-04-01	17:00	2937,0	1,52	45	19	11,00	4,00	22,00	8,0	4,6	0,0	0,0	1	0,00	0,00
1989-04-01	23:59	2961,0	1,52	45	18	12,00	4,00	23,00	8,1	4,6	0,0	0,0	1	0,00	0,00
1989-04-02	04:30	2976,0	1,52	47	18	13,00	5,00	24,00	8,0	4,8	0,0	0,0	1	0,00	0,00
1989-04-02	12:30	2999,0	1,52	47	17	11,00	4,00	27,00	8,0	5,2	0,0	0,0	1	0,00	0,00
1989-04-02	16:00	3009,0	1,52	46	17	10,00	3,00	23,00	8,1	5,0	0,0	0,0	1	0,00	0,00
1989-04-02	17:30	3012,0	1,52	44	18	12,00	4,00	26,00	7,9	5,2	0,0	0,0	1	0,00	0,00
1989-04-02	23:59	3034,0	1,52	44	16	11,00	4,00	22,00	8,0	5,1	0,0	0,0	1	0,00	0,00
1989-04-03	23:59	3034,0	1,52	0	17	10,00	3,00	21,00	8,0	4,8	0,0	0,0	1	0,00	0,00
1989-04-04	11:30	3034,0	1,52	54	19	13,00	6,00	29,00	8,0	5,5	0,0	0,0	1	0,00	0,00
1989-04-04	18:00	3034,0	1,55	50	17	12,00	5,00	28,00	8,0	5,2	0,0	0,0	1	0,00	0,00
1989-04-04	23:59	3034,0	1,55	0	16	11,00	4,00	27,00	8,0	5,2	0,0	0,0	1	0,00	0,00
1989-04-05	23:59	3034,0	1,55	0	17	11,00	5,00	27,00	8,0	5,0	0,0	0,0	1	0,00	0,00
1989-04-06	23:59	3034,0	1,55	0	18	10,00	5,00	29,00	8,0	5,0	0,0	0,0	1	0,00	0,00
1989-04-07	23:59	3035,0	1,47	0	18	16,00	4,00	17,00	9,3	5,6	15,0	90,0	1	0,25	0,10

DAILY DRILLING MUD PROPERTIES, part 1

Page: 3
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjeggstad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Mud Density	Funnel Viscosity	Plastic Viscosity	Yield Point	10 sec gel	10 min gel	pH	Filtrate API	Filtrate NTNP	Filtrate temp	Filtrate NTNP	Cake Thick-ness	Alkal. (Pm)	Alkal. (Pf)
	Unit ->	m	sg	sec/qt	lbs/100lbs	lbs/100lbs	lbs/100 ft			ml/30min	ml/30min	deg C		32nd in	ml	ml
1989-04-08	15:00	3035,0	1,47	53	22	10,00	3,00	8,00	9,5	5,4	15,0	90,0		1	0,40	0,10
1989-04-08	23:59	3052,0	1,47	57	27	11,00	3,00	8,00	9,6	5,6	15,0	90,0		1	0,40	0,10
1989-04-09	14:00	3053,0	1,47	58	26	10,00	3,00	8,00	9,3	6,0	14,0	90,0		1	0,30	0,05
1989-04-09	23:59	3055,0	1,47	57	25	10,00	3,00	8,00	9,3	6,0	14,0	90,0		1	0,40	0,10
1989-04-10	07:00	3090,0	1,47	60	27	13,00	3,00	11,00	9,5	5,4	14,0	90,0		1	0,30	0,10
1989-04-10	14:00	3123,0	1,47	62	27	12,00	3,00	8,00	9,5	5,4	14,0	90,0		1	0,30	0,10
1989-04-10	15:00	3132,0	1,47	64	28	12,00	3,00	10,00	9,4	5,4	14,0	90,0		1	0,40	0,10
1989-04-10	23:59	3170,0	1,47	64	27	13,00	2,00	8,00	9,4	5,2	14,0	90,0		1	0,30	0,10
1989-04-11	08:00	3209,0	1,47	65	25	10,00	3,00	8,00	9,6	5,2	14,0	90,0		1	0,20	0,10
1989-04-11	15:00	3241,0	1,47	63	28	10,00	3,00	7,00	9,6	4,9	14,0	90,0		1	0,20	0,10
1989-04-11	16:00	3267,0	1,47	60	28	11,00	3,00	8,00	9,6	5,0	14,0	90,0		1	0,20	0,10
1989-04-11	23:59	3291,0	1,47	0	28	9,00	2,00	7,00	9,5	4,8	14,0	90,0		1	0,30	0,10
1989-04-12	11:00	3292,0	1,47	68	28	8,00	3,00	7,00	9,6	5,0	14,0	90,0		1	0,30	0,10
1989-04-12	12:15	3297,0	1,47	66	28	10,00	3,00	8,00	9,6	5,2	14,0	90,0		1	0,30	0,10
1989-04-12	23:59	3315,0	1,47	63	28	10,00	2,00	7,00	9,6	4,9	14,0	90,0		1	0,20	0,10
1989-04-13	08:00	3335,0	1,47	63	29	10,00	2,00	7,00	9,6	4,9	14,0	90,0		1	0,20	0,10
1989-04-13	09:00	3337,0	1,47	63	28	11,00	2,00	7,00	9,5	5,0	14,0	90,0		1	0,20	0,10
1989-04-13	15:30	3358,0	1,47	64	29	11,00	2,00	8,00	9,5	4,8	14,0	90,0		1	0,20	0,10
1989-04-13	23:30	3381,0	1,47	62	31	9,00	2,00	6,00	9,5	4,7	14,0	90,0		1	0,20	0,10
1989-04-14	04:30	3405,0	1,47	64	34	9,00	2,00	7,00	9,5	4,6	13,0	90,0		1	0,20	0,10
1989-04-14	08:30	3421,0	1,47	63	33	9,00	2,00	7,00	9,4	4,7	13,0	90,0		1	0,30	0,10
1989-04-14	09:30	3425,0	1,47	63	33	10,00	2,00	8,00	9,4	4,7	13,0	90,0		1	0,30	0,10
1989-04-14	16:00	3453,0	1,47	63	33	10,00	3,00	7,00	9,6	4,7	13,0	90,0		1	0,30	0,10
1989-04-14	22:30	3472,0	1,47	62	34	10,00	2,00	7,00	9,6	4,7	13,0	90,0		1	0,30	0,10
1989-04-15	16:00	3476,0	1,47	0	32	14,00	3,00	9,00	9,3	4,7	13,0	90,0		1	0,30	0,10
1989-04-15	22:30	3498,0	1,47	64	32	10,00	2,00	7,00	9,4	4,7	13,0	90,0		1	0,30	0,10
1989-04-15	23:30	3504,0	1,47	64	35	8,00	2,00	6,00	9,4	4,7	13,0	90,0		1	0,20	0,10
1989-04-16	05:00	3530,0	1,47	62	35	7,00	2,00	6,00	9,4	4,7	15,0	90,0		1	0,20	0,10
1989-04-16	08:00	3543,0	1,47	62	33	10,00	3,00	7,00	9,5	4,7	15,0	100,0		1	0,20	0,10
1989-04-16	09:00	3546,0	1,47	62	32	12,00	2,00	7,00	9,4	4,6	15,0	100,0		1	0,20	0,10
1989-04-16	16:00	3573,0	1,47	63	33	10,00	2,00	7,00	9,6	4,7	15,0	100,0		1	0,20	0,10
1989-04-17	10:00	3592,0	1,47	63	35	9,00	3,00	9,00	9,5	4,6	15,0	100,0		1	0,30	0,10
1989-04-17	11:15	3595,0	1,47	63	34	10,00	3,00	9,00	9,5	4,7	15,0	100,0		1	0,30	0,10
1989-04-17	16:00	3605,0	1,47	66	32	9,00	2,00	7,00	9,6	4,5	15,0	100,0		1	0,30	0,10
1989-04-17	23:59	3628,0	1,47	60	33	8,00	2,00	6,00	9,5	4,6	15,0	100,0		1	0,30	0,10
1989-04-18	04:30	3639,0	1,47	65	30	10,00	2,00	5,00	9,6	4,7	16,0	105,0		1	0,30	1,00
1989-04-18	08:30	3650,0	1,47	65	32	11,00	3,00	8,00	9,5	4,7	16,0	105,0		1	0,30	0,10
1989-04-18	09:45	3652,0	1,47	63	32	10,00	3,00	8,00	9,4	4,7	16,0	105,0		1	0,30	0,10
1989-04-18	15:30	3688,0	1,47	62	32	7,00	2,00	7,00	9,6	4,5	16,0	105,0		1	0,30	0,10
1989-04-18	20:45	3703,0	1,47	62	34	7,00	2,00	6,00	9,6	4,6	16,0	105,0		1	0,30	0,10
1989-04-19	23:00	3703,0	1,47	0	36	11,00	2,00	8,00	9,5	4,7	16,0	105,0		1	0,30	0,10
1989-04-20	10:30	3703,0	1,47	82	36	7,00	2,00	7,00	9,5	3,8	15,0	105,0		1	0,00	3,00
1989-04-21	22:00	3703,0	1,47	85	35	10,00	2,00	7,00	9,5	3,9	15,0	105,0		1	0,30	0,10
1989-04-22	22:30	2926,0	1,47	0	36	7,00	2,00	7,00	9,7	4,0	15,0	105,0		1	0,30	0,10
1989-04-23	22:00	2926,0	1,47	0	35	9,00	2,00	8,00	9,7	4,0	15,0	105,0		1	0,30	0,10
1989-04-24	23:00	1651,0	1,47	78	34	8,00	2,00	7,00	9,6	4,0	15,0	105,0		1	0,30	0,20
1989-04-25	23:59	412,0	1,13	34	0	0,00	0,00	0,00	0,0	0,0	0,0	0,0		0	0,00	0,00

DAILY DRILLING MUD PROPERTIES, part 2

Page: 1
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjeggstad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Alkalinity Filtrate (MF)	Chloride in	Chloride out	Calcium in	Calcium out	Magnesium in	Magnesium out	Sand Content	Solids Content	Oil Content	Water Content
	Unit ->	m	ml	ppm	ppm	mg/l	mg/l	mg/l	mg/l	% vol	% vol	% vol	% vol
1989-02-22	23:59	204,0	0,0	0	0	0	0	0	0	0,0	0,0	0,0	0,0
1989-02-23	23:59	223,0	0,0	0	0	0	0	0	0	0,0	0,0	0,0	0,0
1989-02-24	23:59	227,0	0,0	0	0	0	0	0	0	0,0	0,0	0,0	0,0
1989-02-25	23:59	331,0	0,0	0	0	0	0	0	0	0,0	0,0	0,0	0,0
1989-02-27	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-02-28	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-01	12:40	368,0	0,0	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-01	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-02	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-03	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-04	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-05	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-06	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-07	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-08	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	1,9	0,0	98,1
1989-03-09	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-10	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-11	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-12	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-13	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-14	23:59	368,0	0,7	23000	0	200	0	1094	0	0,0	2,9	0,0	97,1
1989-03-15	08:00	442,0	0,9	22000	0	160	0	1264	0	0,0	2,9	0,0	97,1
1989-03-15	15:00	535,0	0,4	22000	0	240	0	1191	0	0,0	3,9	0,0	96,1
1989-03-15	16:00	559,0	0,3	0	23000	0	240	0	1215	0,0	5,4	0,0	94,6
1989-03-15	23:30	751,0	0,3	23000	0	320	0	1166	0	0,0	3,9	0,0	96,1
1989-03-16	03:00	839,0	0,4	23000	0	320	0	1264	0	1,0	6,9	0,0	93,1
1989-03-16	16:30	1046,0	0,3	0	0	0	0	0	0	0,0	0,0	0,0	0,0
1989-03-16	16:31	1046,0	0,3	23000	0	280	0	1288	0	1,5	7,9	0,0	92,1
1989-03-16	23:59	1218,0	0,4	23000	0	280	0	1166	0	0,5	7,9	0,0	92,1
1989-03-17	09:30	1219,0	0,6	23000	0	360	0	1337	0	1,0	8,9	0,0	91,1
1989-03-17	10:30	1244,0	0,6	23000	0	360	0	1337	0	1,5	8,9	0,0	91,1
1989-03-17	16:30	1391,0	0,5	23000	0	280	0	1191	0	1,5	7,9	0,0	92,1
1989-03-17	23:59	1548,0	0,5	23000	0	280	0	1239	0	2,0	8,9	0,0	91,1
1989-03-18	04:00	1613,0	0,3	23000	0	240	0	1312	0	1,5	8,9	0,0	91,1
1989-03-18	05:00	1625,0	0,3	23000	0	240	0	1312	0	1,5	8,9	0,0	91,1
1989-03-18	09:45	1625,0	0,4	22000	0	320	0	1361	0	2,5	9,0	0,0	91,0
1989-03-18	23:59	1625,0	0,5	23000	0	320	0	1264	0	1,5	8,9	0,0	91,1
1989-03-19	10:15	1625,0	0,6	23000	0	360	0	1337	0	2,0	8,9	0,0	91,1
1989-03-19	11:00	1625,0	0,6	23000	0	320	0	1312	0	2,5	8,9	0,0	91,1
1989-03-19	23:59	1625,0	0,6	23000	0	320	0	1264	0	2,5	8,9	0,0	91,1
1989-03-20	08:00	1625,0	0,6	23000	0	360	0	1288	0	1,5	8,9	0,0	91,1
1989-03-20	12:30	1625,0	0,6	23000	0	360	0	1239	0	1,0	8,9	0,0	91,1
1989-03-20	14:30	1625,0	0,6	23000	0	360	0	1264	0	0,5	7,9	0,0	92,1
1989-03-20	23:59	1625,0	0,6	23000	0	400	0	1215	0	0,5	6,9	0,0	93,1
1989-03-21	23:59	1625,0	0,6	23000	0	360	0	1239	0	0,5	6,9	0,0	93,1
1989-03-22	06:00	1625,0	0,3	22000	0	560	0	1118	0	1,0	8,0	0,0	92,0
1989-03-22	07:00	1625,0	0,3	0	22000	0	480	0	1166	1,5	9,4	0,0	90,6
1989-03-22	23:59	1625,0	0,3	22000	0	560	0	1118	0	1,0	8,0	0,0	92,0
1989-03-23	23:59	1625,0	0,3	22000	0	480	0	1166	0	1,0	8,0	0,0	92,0

DAILY DRILLING MUD PROPERTIES, part 2

Page: 2
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjoggestad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Alkalinity Filtrate (Mf)	Chloride in	Chloride out	Calcium in	Calcium out	Magnesium in	Magnesium out	Sand Content	Solids Content	Oil Content	Water Content
	Unit ->	m	ml	ppm	ppm	mg/l	mg/l	mg/l	mg/l	% vol	% vol	% vol	% vol
1989-03-24	18:30	1728,0	0,3	23000	0	1360	0	146	0	1,0	10,0	0,0	90,0
1989-03-24	19:30	1759,0	0,3	0	23000	0	1360	0	170	1,0	11,3	0,0	88,7
1989-03-24	23:30	1810,0	0,1	0	22000	0	1120	0	219	0,8	11,3	0,0	88,7
1989-03-25	04:30	1856,0	0,2	23000	0	1080	0	316	0	0,8	10,0	0,0	90,0
1989-03-25	07:30	1900,0	0,2	0	23000	0	1000	0	365	0,8	11,3	0,0	88,7
1989-03-25	16:30	2058,0	0,2	23000	0	960	0	486	0	0,8	10,0	0,0	90,0
1989-03-25	17:30	2073,0	0,1	0	23000	0	880	0	632	0,8	11,3	0,0	88,7
1989-03-25	23:30	2138,0	0,1	0	23000	0	720	0	656	0,5	11,3	0,0	88,7
1989-03-26	04:30	2182,0	0,2	0	24000	0	800	0	486	0,5	11,3	0,0	88,7
1989-03-26	09:30	2237,0	0,2	0	24000	0	800	0	486	0,5	11,3	0,0	88,7
1989-03-26	13:00	2278,0	0,2	0	23000	0	720	0	656	0,3	11,3	0,0	88,7
1989-03-26	19:30	2345,0	0,3	0	23000	0	760	0	729	0,3	12,3	0,0	87,7
1989-03-26	23:30	2386,0	0,3	0	23000	0	440	0	923	0,3	11,3	0,0	88,7
1989-03-27	20:00	2422,0	0,3	0	23000	0	560	0	923	0,3	11,3	0,0	88,7
1989-03-27	23:30	2424,0	0,3	23000	0	520	0	899	0	0,3	10,0	0,0	90,0
1989-03-28	08:30	2439,0	0,3	0	24000	0	600	0	972	0,3	11,3	0,0	88,7
1989-03-28	16:00	2511,0	0,4	0	23000	0	600	0	996	0,3	11,3	0,0	88,7
1989-03-28	21:30	2573,0	0,3	23000	0	680	0	948	0	0,3	10,0	0,0	90,0
1989-03-28	22:30	2587,0	0,3	0	23000	0	680	0	996	0,3	11,3	0,0	88,7
1989-03-29	03:30	2628,0	0,4	0	24000	0	560	0	923	0,3	11,3	0,0	88,7
1989-03-29	11:00	2682,0	0,4	0	24000	0	520	0	972	0,3	11,3	0,0	88,7
1989-03-29	18:30	2730,0	0,3	23000	0	440	0	1045	0	0,3	10,0	0,0	90,0
1989-03-29	19:30	2736,0	0,4	0	23000	0	440	0	996	0,3	11,3	0,0	88,7
1989-03-29	23:00	2760,0	0,3	0	23000	0	440	0	1045	0,3	11,3	0,0	88,7
1989-03-30	04:30	2781,0	0,4	0	24000	0	440	0	1021	0,3	11,3	0,0	88,7
1989-03-30	09:00	2800,0	0,4	0	23000	0	400	0	1045	0,3	11,3	0,0	88,7
1989-03-30	12:30	2821,0	0,5	24000	0	480	0	972	0	0,3	8,9	0,0	91,1
1989-03-30	14:00	2827,0	0,5	0	24000	0	480	0	996	0,3	11,3	0,0	88,7
1989-03-30	23:59	2879,0	0,5	0	23000	0	400	0	972	0,3	10,3	0,0	89,7
1989-03-31	05:00	2901,0	0,5	23000	0	360	0	996	0	0,3	8,9	0,0	91,1
1989-03-31	06:30	2904,0	0,5	23000	23000	400	400	996	972	0,3	10,0	0,0	90,0
1989-03-31	23:59	2904,0	0,5	23000	0	400	0	1021	0	0,3	10,0	0,0	90,0
1989-04-01	05:00	2906,0	0,5	24000	0	520	0	972	0	0,3	10,9	0,0	89,1
1989-04-01	08:00	2917,0	0,4	24000	0	480	0	996	0	0,3	9,9	0,0	90,1
1989-04-01	15:30	2935,0	0,4	24000	0	440	0	996	0	0,3	17,0	0,0	83,0
1989-04-01	17:00	2937,0	0,5	24000	24000	440	440	948	996	0,3	18,0	0,0	82,0
1989-04-01	23:59	2961,0	0,4	23000	0	440	0	996	0	0,3	18,0	0,0	82,0
1989-04-02	04:30	2976,0	0,4	24000	0	480	0	972	0	0,3	18,0	0,0	82,0
1989-04-02	12:30	2999,0	0,5	24000	24000	440	440	1021	1021	0,3	18,0	0,0	82,0
1989-04-02	16:00	3009,0	0,5	23000	0	440	0	1045	0	0,3	18,0	0,0	82,0
1989-04-02	17:30	3012,0	0,4	24000	24000	440	440	996	996	0,3	19,0	0,0	81,0
1989-04-02	23:59	3034,0	0,5	24000	0	440	0	972	0	0,3	18,0	0,0	82,0
1989-04-03	23:59	3034,0	0,4	24000	0	440	0	996	0	0,3	18,0	0,0	82,0
1989-04-04	11:30	3034,0	0,6	24000	0	480	0	1021	0	0,3	18,0	0,0	82,0
1989-04-04	18:00	3034,0	0,5	24000	0	480	0	972	0	0,3	19,0	0,0	81,0
1989-04-04	23:59	3034,0	0,5	24000	0	480	0	996	0	0,3	19,0	0,0	81,0
1989-04-05	23:59	3034,0	0,5	24000	0	480	0	996	0	0,3	19,0	0,0	81,0
1989-04-06	23:59	3034,0	0,5	24000	0	480	0	923	0	0,3	19,0	0,0	81,0
1989-04-07	23:59	3035,0	0,4	1800	0	120	0	0	0	0,0	16,2	0,0	83,8

DAILY DRILLING MUD PROPERTIES, part 2

Page: 3
Date: 1989-05-18

Well no: 33/12-7 Spud date: 1989-02-22 Rig name: Deep Sea Bergen
Engineers: A. Brauti J.A.Rasmussen M. Rothnie O. Skjeggstad

Operator: Statoil Days to TD: 33 Warehouse:

Contractor: Oddfjell Drilling Total Depth: 3703,00 m Total Cost: 1477206,8 Currency: NOK

Date	Time	Depth	Alkalinity Filtrate (Mf)	Chloride in	Chloride out	Calcium in	Calcium out	Magnesium in	Magnesium out	Sand Content	Solids Content	Oil Content	Water Content
	Unit ->	m	ml	ppm	ppm	mg/l	mg/l	mg/l	mg/l	% vol	% vol	% vol	% vol
1989-04-08	15:00	3035,0	0,6	2200	0	120	0	24	0	0,0	16,2	0,0	83,8
1989-04-08	23:59	3052,0	0,6	2400	0	160	0	0	0	0,0	16,2	0,0	83,8
1989-04-09	14:00	3053,0	0,6	2700	0	100	0	36	0	0,3	16,2	0,0	83,8
1989-04-09	23:59	3055,0	0,6	2500	0	160	0	0	0	0,3	16,2	0,0	83,8
1989-04-10	07:00	3090,0	0,7	3000	0	80	0	24	0	0,3	16,2	0,0	83,8
1989-04-10	14:00	3123,0	0,6	3000	0	80	0	24	0	0,3	14,2	0,0	85,8
1989-04-10	15:00	3132,0	0,6	0	2800	0	80	0	24	0,3	17,3	0,0	82,7
1989-04-10	23:59	3170,0	0,6	2500	0	120	0	0	0	0,3	16,2	0,0	83,8
1989-04-11	08:00	3209,0	0,9	3300	0	80	0	49	0	0,3	16,1	0,0	83,9
1989-04-11	15:00	3241,0	0,9	3300	0	80	0	24	0	0,3	17,1	0,0	82,9
1989-04-11	16:00	3267,0	0,8	0	3300	0	80	0	24	0,8	17,3	0,0	82,7
1989-04-11	23:59	3291,0	0,8	3200	0	120	0	12	0	0,3	17,1	0,0	82,9
1989-04-12	11:00	3292,0	0,8	3300	0	100	0	12	0	0,3	17,1	0,0	82,9
1989-04-12	12:15	3297,0	0,9	0	3300	0	80	0	24	0,5	17,3	0,0	82,7
1989-04-12	23:59	3315,0	0,9	3300	0	80	0	24	0	0,3	17,1	0,0	82,9
1989-04-13	08:00	3335,0	0,9	3300	0	80	0	24	0	0,3	17,1	0,0	82,9
1989-04-13	09:00	3337,0	0,9	0	3300	0	120	0	0	0,5	17,3	0,0	82,7
1989-04-13	15:30	3358,0	0,9	3300	0	80	0	49	0	0,3	17,1	0,0	82,9
1989-04-13	23:30	3381,0	0,9	3300	0	60	0	36	0	0,3	17,1	0,0	82,9
1989-04-14	04:30	3405,0	0,9	0	3300	0	120	0	0	0,3	17,3	0,0	82,7
1989-04-14	08:30	3421,0	0,9	3300	0	120	0	0	0	0,3	18,1	0,0	81,9
1989-04-14	09:30	3425,0	0,9	0	3300	0	80	0	24	0,5	18,3	0,0	81,7
1989-04-14	16:00	3453,0	0,9	3300	0	80	0	49	0	0,3	18,1	0,0	81,9
1989-04-14	22:30	3472,0	0,9	0	3300	0	80	0	49	0,3	19,3	0,0	80,7
1989-04-15	16:00	3476,0	0,9	3600	0	120	0	49	0	0,3	18,1	0,0	81,9
1989-04-15	22:30	3498,0	0,9	3600	0	80	0	49	0	0,3	18,1	0,0	81,9
1989-04-15	23:30	3504,0	0,9	0	3700	0	80	0	49	0,3	18,3	0,0	81,7
1989-04-16	05:00	3530,0	0,9	3600	0	80	0	49	0	0,3	18,1	0,0	81,9
1989-04-16	08:00	3543,0	0,9	4400	0	80	0	73	0	0,3	18,1	0,0	81,9
1989-04-16	09:00	3546,0	0,9	0	4400	0	80	0	73	0,3	19,3	0,0	80,7
1989-04-16	16:00	3573,0	1,0	4200	0	80	0	49	0	0,3	18,1	0,0	81,9
1989-04-17	10:00	3592,0	1,0	4500	0	80	0	73	0	0,3	18,1	0,0	81,9
1989-04-17	11:15	3595,0	0,9	0	4500	0	80	0	73	0,5	19,3	0,0	80,7
1989-04-17	16:00	3605,0	9,0	3900	0	80	0	24	0	0,3	18,1	0,0	81,9
1989-04-17	23:59	3628,0	1,2	4500	0	80	0	24	0	0,3	19,1	0,0	80,9
1989-04-18	04:30	3639,0	1,2	4500	0	80	0	24	0	0,3	19,1	0,0	80,9
1989-04-18	08:30	3650,0	1,2	4200	0	80	0	0	0	0,3	19,1	0,0	80,9
1989-04-18	09:45	3652,0	1,1	0	4300	0	80	0	0	0,3	19,3	0,0	80,7
1989-04-18	15:30	3688,0	1,1	4300	0	80	0	0	0	0,3	18,1	0,0	81,9
1989-04-18	20:45	3703,0	1,1	4300	0	80	0	0	0	0,3	19,1	0,0	80,9
1989-04-19	23:00	3703,0	1,2	4300	0	80	0	0	0	0,3	19,1	0,0	80,9
1989-04-20	10:30	3703,0	0,1	0	4300	0	80	0	0	0,3	19,3	0,0	80,7
1989-04-21	22:00	3703,0	1,1	0	4100	0	80	0	24	0,3	19,3	0,0	80,7
1989-04-22	22:30	2926,0	1,1	4100	0	80	0	24	0	0,3	19,1	0,0	80,9
1989-04-23	22:00	2926,0	1,2	4100	0	80	0	0	0	0,3	19,1	0,0	80,9
1989-04-24	23:00	1651,0	1,1	4100	0	80	0	0	0	0,3	19,1	0,0	80,9
1989-04-25	23:59	412,0	0,0	0	0	0	0	0	0	0,0	0,0	0,0	0,0

U-601

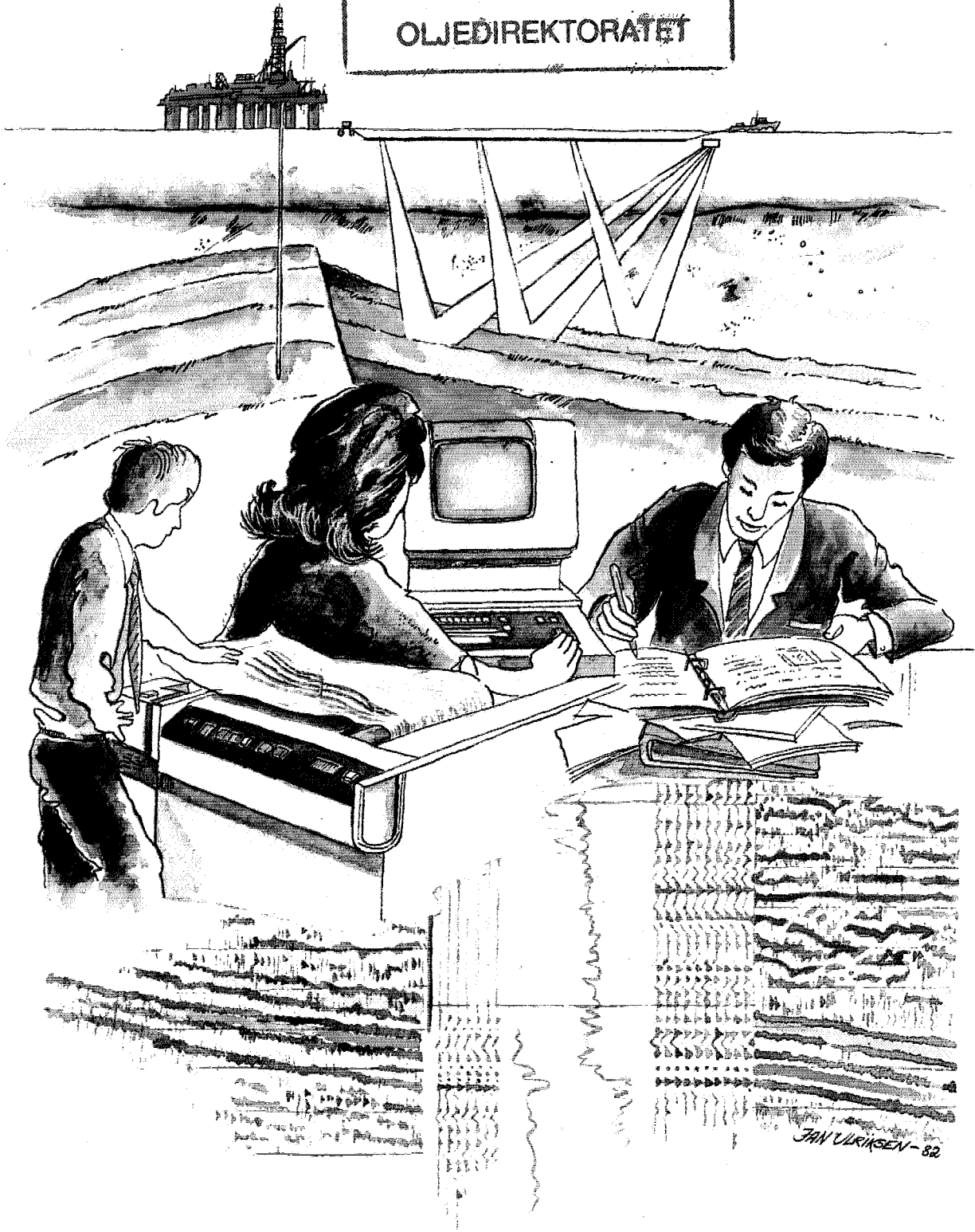
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BA-89-1733-1

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OLJEDIREKTORATET



**GEOCHEMICAL EVALUATION OF
STATOIL 33/12-7 WELL,
OFFSHORE NORWAY**

1 INTRODUCTION.

1.1 General

This report presents the geochemical evaluation of selected intervals from well 33/12-7. The analytical work was performed in accordance with Statoil standard and the guidelines given in "Organic Geochemistry Standard Analytical Procedure Requirement and Reporting Guide" (Kjell Øygard *et al.*, 1988). The project has been carried out at Statoil's GEOLAB with contribution from IFE ("Vitrinite reflectance on 4 core samples from well 33/12-7", Appendix A).

1.2. Objectives

The aims of the project have been as follows:

- to evaluate the petroleum potential of source rock intervals
- to document hydrocarbon shows

Sequences between 2931 mRKB and 3484 mRKB have been investigated according to the following analytical program:

ANALYSIS	NUMBER OF SAMPLES			
	Cuttings	SWC	Core	Total
TOC	33	9		42
Rock-Eval pyrolysis	33	9		42
Vitrinite reflectance			4	4
Kerogen description	4	1		5
Extraction	1	2	3	6
GC of total extract	1	2	3	6

TABLES 1 - 4

TABLE 1 PYROLYSIS DATA

Country: Norway

Well : 33/12-7

Depth mKB	Sample no.		S1	S2	TOC	HI	PP	PI	TMAX
-----	-----		-----	-----	-----	-----	-----	-----	-----
2931,00	S3730	*	0,1	2,0	1,2	167	2,2	0,07	429
2934,00	S3731	*	0,6	13,1	3,0	440	13,8	0,04	424
2937,00	S3732	*	0,4	8,0	2,4	329	8,5	0,05	425
2940,00	S3733	*	0,2	2,3	1,4	166	2,6	0,08	428
2943,00	S3734	*	0,9	18,3	3,7	490	19,3	0,05	425
2946,00	S3735	*	2,0	34,2	5,4	624	36,3	0,06	420
2946,00	S3735B	*	1,3	26,1	*****		27,5	0,05	420
2949,00	S3736	*	1,7	27,2	4,8	566	28,9	0,06	423
2952,00	S3737	*	3,7	40,6	7,5	542	44,5	0,09	421
2955,00	S3738	*	4,4	39,3	7,4	530	43,8	0,10	422
2958,00	S3739	*	3,4	30,2	6,6	454	33,7	0,10	419
2961,00	S3740	*	3,2	30,9	6,7	460	34,3	0,10	420
2964,00	S3741	*	3,0	31,0	6,3	485	34,1	0,09	419
2967,00	S3742	*	3,3	32,2	6,8	469	35,5	0,09	420
2970,00	S3743	*	2,4	28,6	6,4	443	31,1	0,08	421
2973,00	S3744	*	2,0	25,9	6,0	427	28,0	0,07	421
2976,00	S3745	*	1,1	19,6	4,7	417	20,8	0,06	423
2979,00	S3746	*	1,2	18,8	4,4	425	20,1	0,06	422
2982,00	S3747	*	0,9	14,4	3,7	388	15,4	0,06	426
2985,00	S3748	*	0,8	12,3	3,4	359	13,2	0,06	421
2988,00	S3749	*	1,3	19,5	4,8	402	21,0	0,06	424
2991,00	S3750	*	1,3	17,3	4,4	394	18,7	0,07	422
2994,00	S3751	*	2,0	26,5	5,6	471	28,6	0,07	424
2997,00	S3752	*	1,0	18,9	4,2	443	20,0	0,05	428
3000,00	S3753	*	0,8	16,6	3,6	459	17,5	0,05	429
3003,00	S3754	*	1,3	21,0	4,3	484	22,4	0,06	426
3006,00	S3755	*	0,8	12,7	3,4	374	13,5	0,06	429

TABLE 1 PYROLYSIS DATA

3009,00	S3756	*	0,8	13,5	3,2	418	14,3	0,06	429
3012,00	S3757	*	0,7	12,4	3,2	386	13,2	0,06	430
3015,00	S3758	*	0,5	9,0	2,7	335	9,6	0,06	431
3018,00	S3759	*	0,5	9,3	2,6	348	9,9	0,05	429
3021,00	S3760	*	0,5	8,9	2,9	305	9,5	0,06	428
3024,00	S3761	*	0,3	6,4	2,4	264	6,8	0,05	433
3027,00	S3762	*	0,5	9,1	3,5	262	9,8	0,06	430
3396,00	S3716	*	0,1	1,1	0,7	154	1,3	0,14	431
3405,00	S3717	*	0,4	3,1	1,4	222	3,6	0,14	429
3411,00	S3718	*	0,1	0,7	0,7	100	0,9	0,13	436
3423,00	S3719	*	0,1	1,0	1,1	97	1,3	0,15	435
3447,00	S3720	*	0,2	1,2	0,8	142	1,4	0,14	435
3461,00	S3721	*	0,1	1,0	0,9	113	1,2	0,14	435
3473,00	S3722	*	0,1	1,1	0,9	115	1,3	0,12	441
3477,00	S3723	*	0,3	1,5	1,2	120	1,8	0,17	439
3484,00	S3724	*	0,4	3,3	2,8	118	3,9	0,12	433

S1, S2 in mg/g rock // HI as $(S2/TOC)*100$ //
 PP as $S1+S2$ // PI as $S1/(S1+S2)$

TABLE 2 VISUAL KEROGEN DESCRIPTION

WELL : 33/12-7

Sample no.	Depth	Lip	Vit	In	AOM	
	m				Lip	Hum
	RKB				%	%
S3731	2934	6	<1	<1	94	
S3735	2946	3	2	<1	95	
S3742	2967	7	1	-	92	
S3759	3018	16	6	2	76	

TABLE 3 CONCENTRATION (ppm) OF EXTRACTABLE C₁₅₊ MATERIAL IN ROCK

Country: Norway

Well : 33/12-7

Depth mKB	Sample no.	TOTAL EXSTR	HYDROCARBONS			NON-HYDROCARBONS		
			SAT	ARO	TOTAL	NSO	ASF	TOTAL
2946.00	S3735B	* 3872	625	1080	1705	1187	980	2167
3035.00	S3727	* 189						
3037.50	S3728	* 256						
3048.75	S3729	* 354						
3392.00	S3725	* 743						
3401.50	S3726	* 1441						

TABLE 4 GAS CHROMATOGRAPHIC DATA

Country: Norway

Well : 33/12-7

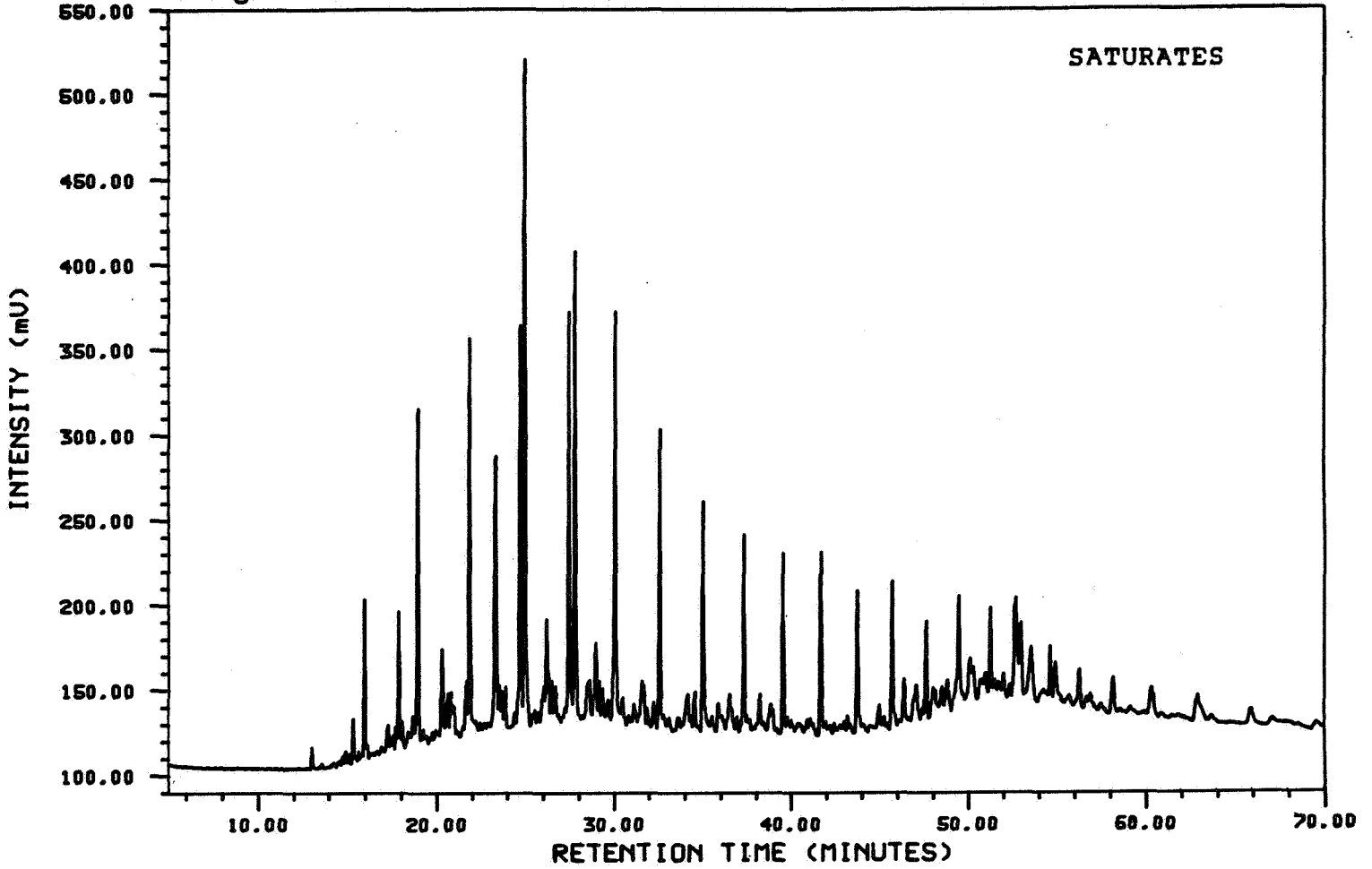
Depth mKB	Sample no.		PRISTANE/ PHYTANE	PRISTANE/ N-C17	PHYTANE/ N-C18	A/B
-----	-----		-----	-----	-----	-----
2946.00	S3735B	*	1,41	2,00	1,32	1,52
3035.00	S3727	*	0,67	0,82	0,57	1,44
3037.50	S3728	*	0,64	0,77	0,51	1,51
3048.75	S3729	*	0,64	0,77	0,55	1,40
3392.00	S3725	*	1,38	1,00	0,60	1,67
3401.50	S3726	*	1,88	1,25	0,71	1,76

FIGURE 2

Analysis S3735I

4,1,1

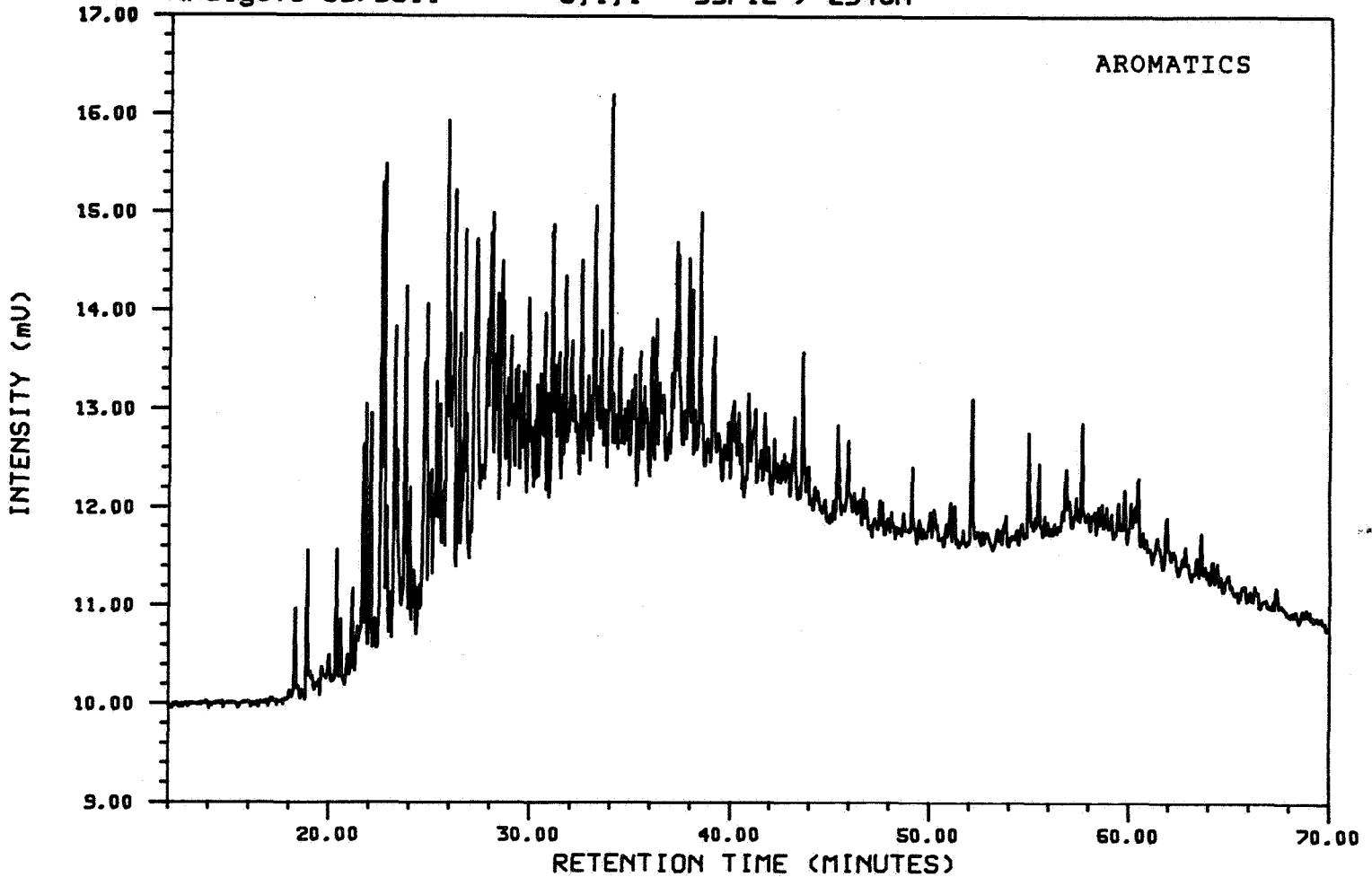
33/12-7 2946M



Analysis S3735II

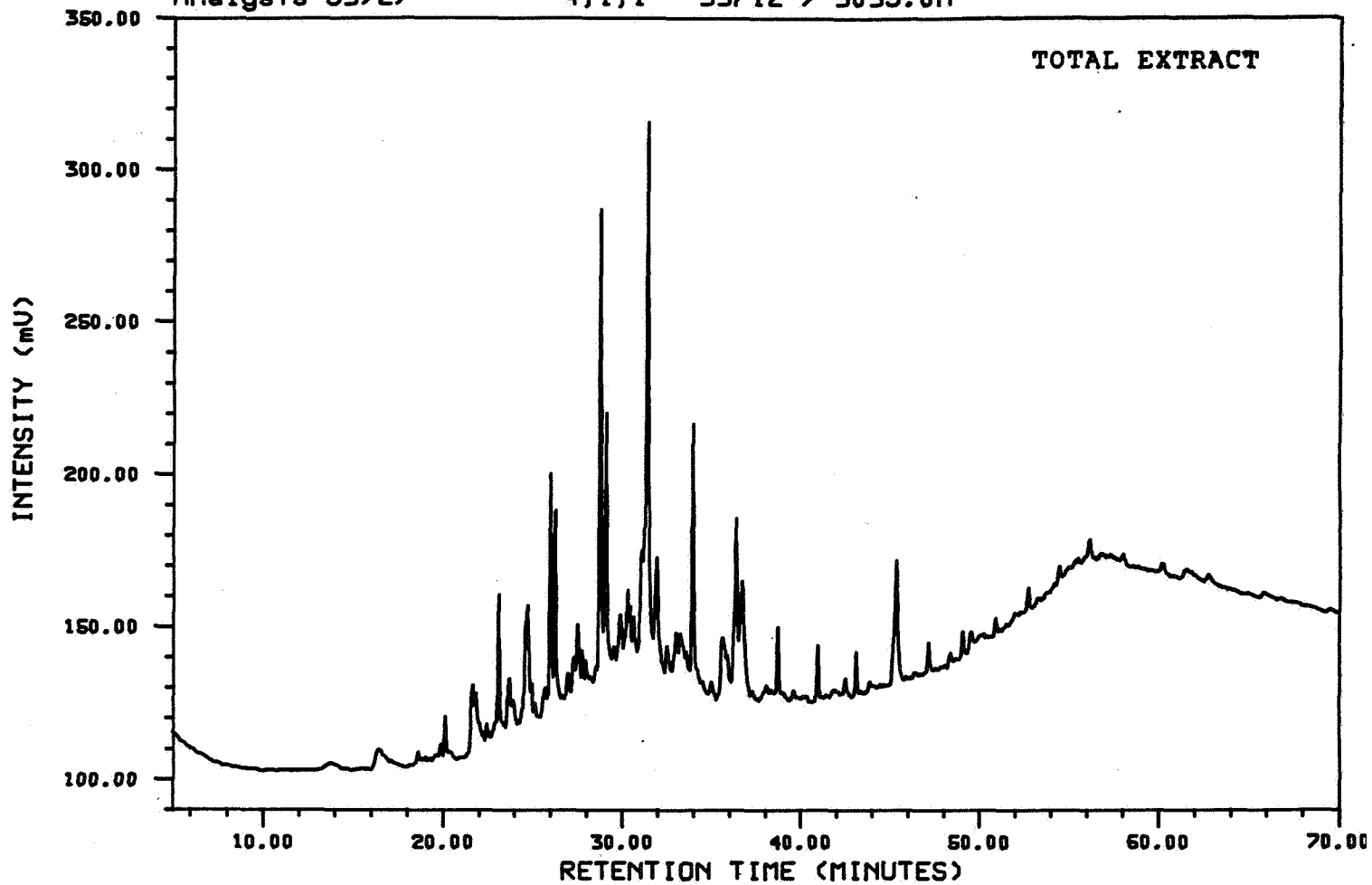
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33/12-7 2946M



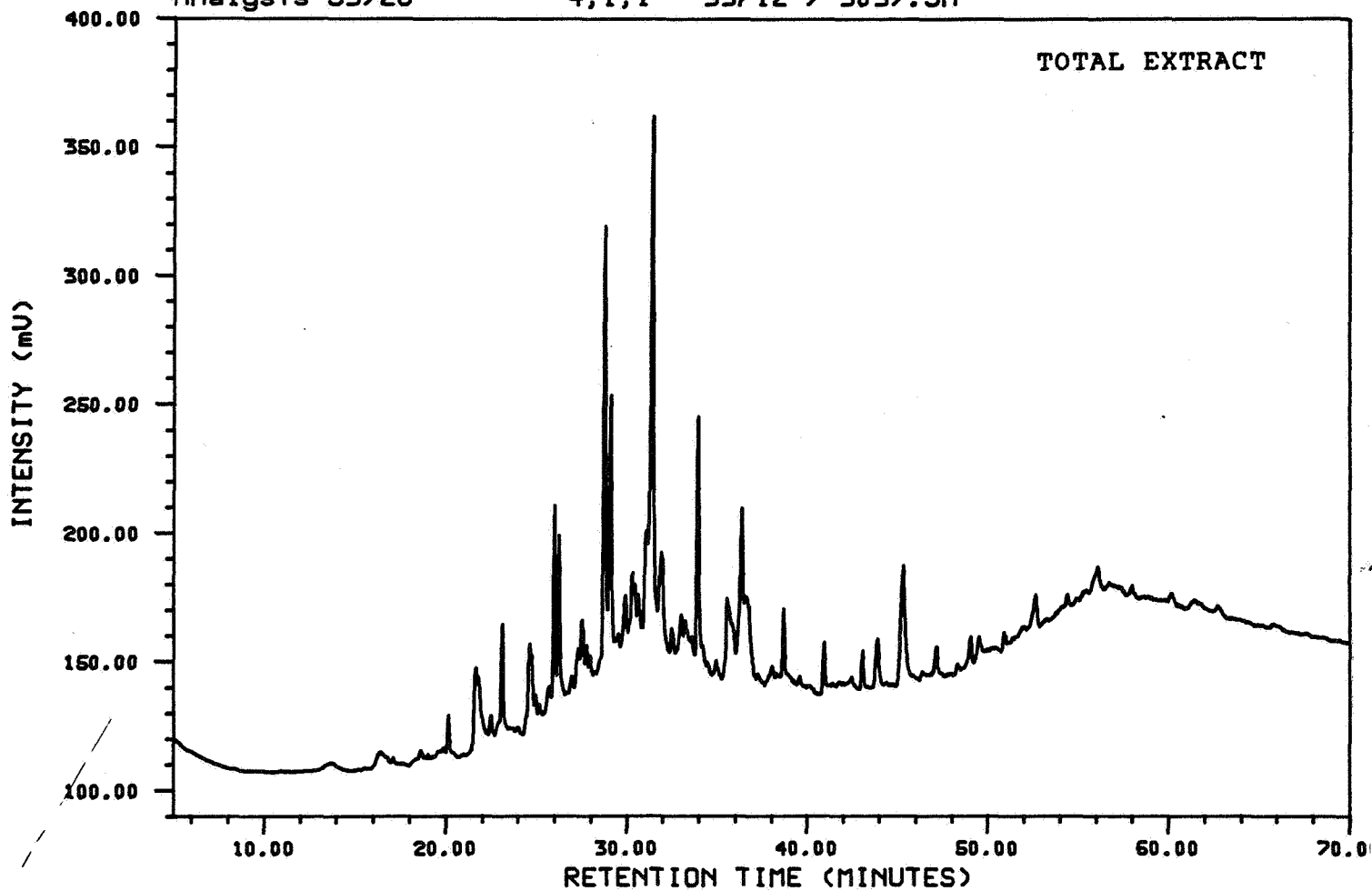
Analysis S3727

4,1,1 33/12-7 3035.0M



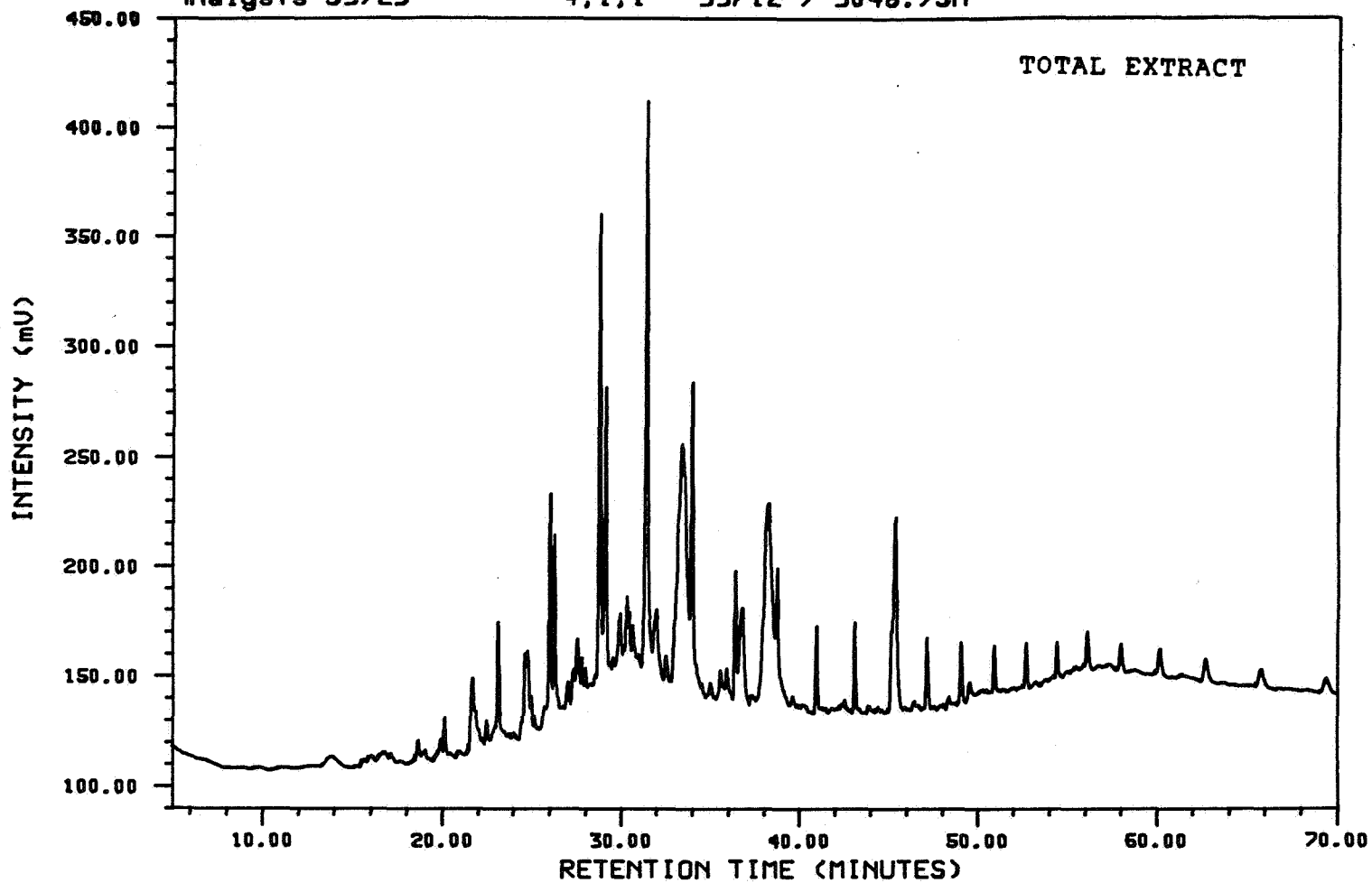
Analysis S3728

4,1,1 33/12-7 3037.5M



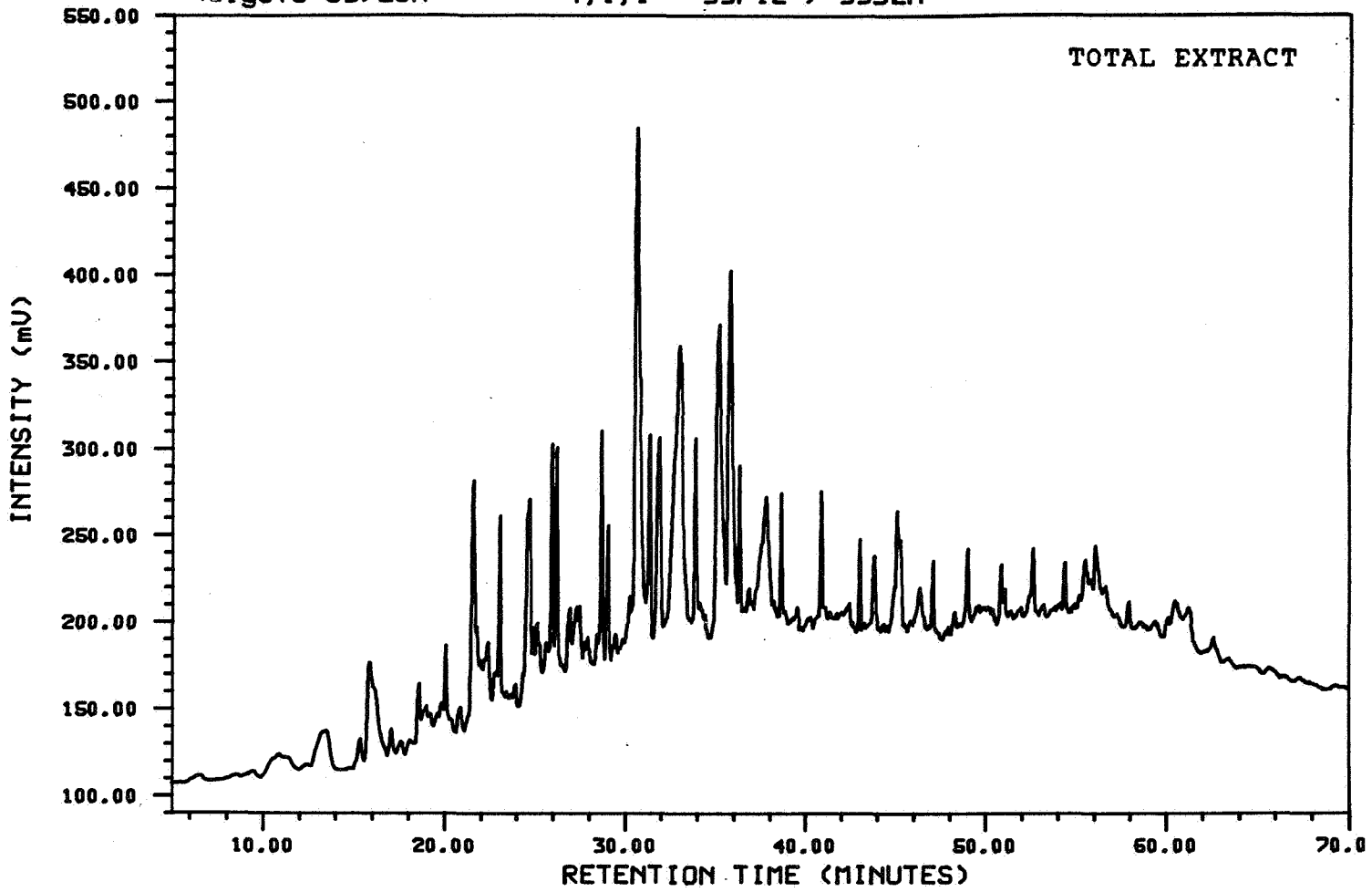
analysis S3729

4,1,1 33/12-7 3048.75M



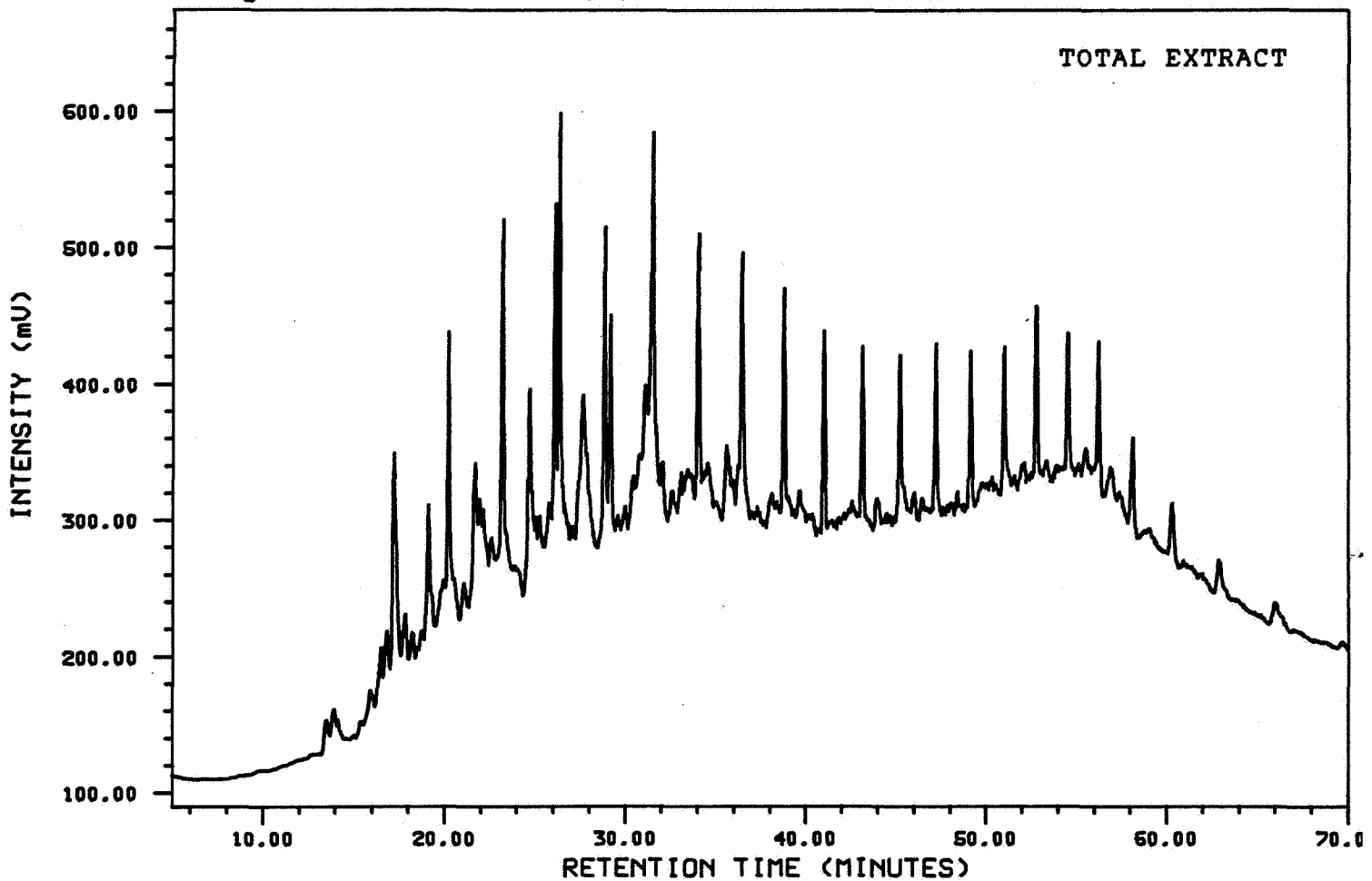
Analysis S3725A

4,1,1 33/12-7 3392M



Analysis S3726B

4,1,1 33/12-7 3401.5M



APPENDIX A

Table of Contents

1 INTRODUCTION	1
2 MATERIAL	1
3 VITRINITE REFLECTANCE ANALYTICAL TECHNIQUES	1
4 RESULTS	2
5 CONCLUSION	2
6 REFERENCES	2
7 LIST OF TABLES	2
8 APPENDIX: Listings and histograms of raw data	2

1 INTRODUCTION

This report gives the results of vitrinite reflectance analyses performed on 4 samples from well 33/12-7 in the Norwegian sector of the northern North Sea:

Well	Number of samples	Depth interval, m
33/12-7	4	3040.25-3051.55

2 MATERIAL

The samples were provided from the client as bulk rock. The lithologies of the samples were coal and humic carbonaceous shales ideally suited for vitrinite reflectance analysis.

3 VITRINITE REFLECTANCE ANALYTICAL TECHNIQUES

In this report the term *vitrinite reflectance* is used throughout although strictly vitrinite is defined only for the bituminous coal range for reflectance values above approximately $R_m=0.5$. The vitrinite precursor in the lower reflecting brown coal range is called *huminite*.

The samples being analysed for vitrinite reflectance in this study were not treated with any acid prior to further preparation. The bulk rock material was embedded in a cold setting epoxy resin to make briquettes. The material was not crushed prior to embedding. The briquettes were subsequently ground flat and polished using 0.25 micron diamond paste and magnesium oxide as the two final steps.

The analytical equipment being used was a Zeiss MPM 03 photometer microscope. Viewing and measurements were made through a Zeiss Neofluoar 40/0.90 oil objective using immersion oil with refractive index $n=1.518$. The measurements were made through a green filter with peak transmission at 546 nm and with a photometer sensitive field of about 2.5 micron in diameter. For photometer calibration a sapphire glass standard was used with a reflectance in oil of $R_m=0.588$. The measurements were made without a polarizer and using a stationary stage. On each sample 25 points were measured, preferentially telocollinite in samples where it could be positively identified. A representative population was selected among the readings based on observations made during measuring, and an arithmetic mean was calculated for this population.

4 RESULTS

The vitrinite reflectance results and interpretations are given in Table 1 (analytical data), whereas all the raw data including histograms are given in Appendix. The data are considered highly reliable. Three of the samples were humic carbonaceous claystones with abundant liptinite, vitrinite and inertinite, besides abundant pyrite. One sample was coal, highly dominated by inertinite over vitrinite and liptinite. It can be classified as a clarodurite.

The scatter in vitrinite reflectance among the samples from $R_m = 0.43$ to $R_m = 0.49$ is well within the range of what can be expected over a narrow coalbearing interval (Thronsen, 1986).

5 CONCLUSION

The results of this study show that it has been possible to obtain highly reliable vitrinite reflectance data from the sample material.

6 REFERENCES

Thronsen, T. (1986). Scatter in vitrinite reflectance data obtained from coaly lithologies. *IFE/KR/F-86/130*.

7 LIST OF TABLES

Table 1. Vitrinite reflectance data.

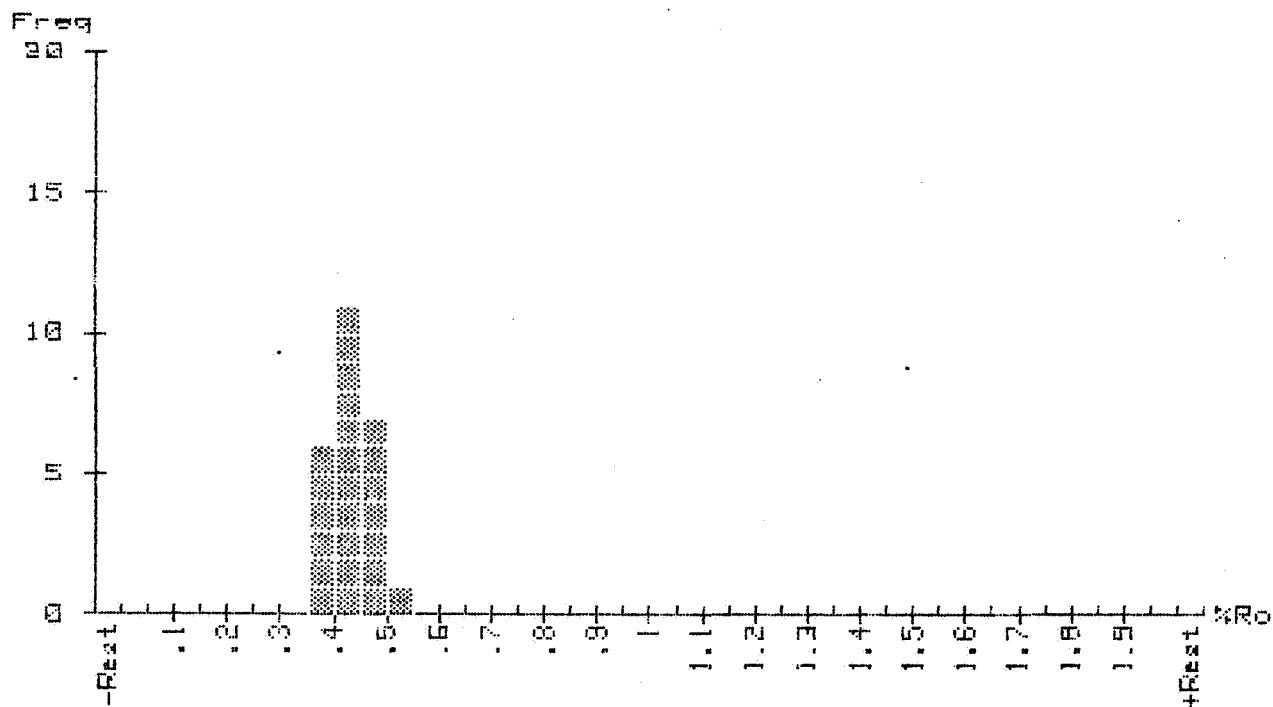
8 APPENDIX: Listings and histograms of raw data

Raw data and histograms.

Table 1. Vitrinite reflectance data.

Well	sample code IFE	sample depth mrkb	lithology	vitrinite reflectance Rm (N) sample quality.
33/12-7	ST 1138	3040.25 C	claystone	0.43 (25) 00000
	ST 1139	3047.40 C	coal (CID-V)	0.48 (25) 00000
	ST 1140	3050.65 C	claystone	0.44 (25) 00000
	ST 1141	3051.55 C	claystone	0.49 (25) 00000
LEGEND				
Rm	: mean random reflectance in oil			
N	: number of readings			
C	: core sample			
CID-V	: clarodurite-V (cp. Throndsen, 1986)			
CODE FOR DATA QUALITY				
The sample quality is characterised by five items : 12345				
item 1:	abundance of vitrinite			
item 2:	identification of vitrinite			
item 3:	type of vitrinite			
item 4:	particle size			
item 5:	particle surface quality			
+	: may give a too high vitrinite reflectance value			
o	: have no effect on the resulting vitrinite reflectance value			
-	: may give a too low vitrinite reflectance value			
an ideal sample is characterised as follows: 00000				

Sample No.: 11138 1 1A1
 Well Name: 133/12-7
 Depth: 13040.25 m, CORE
 Analyst: IT.THRODNSEN
 Date: 109.06.1989

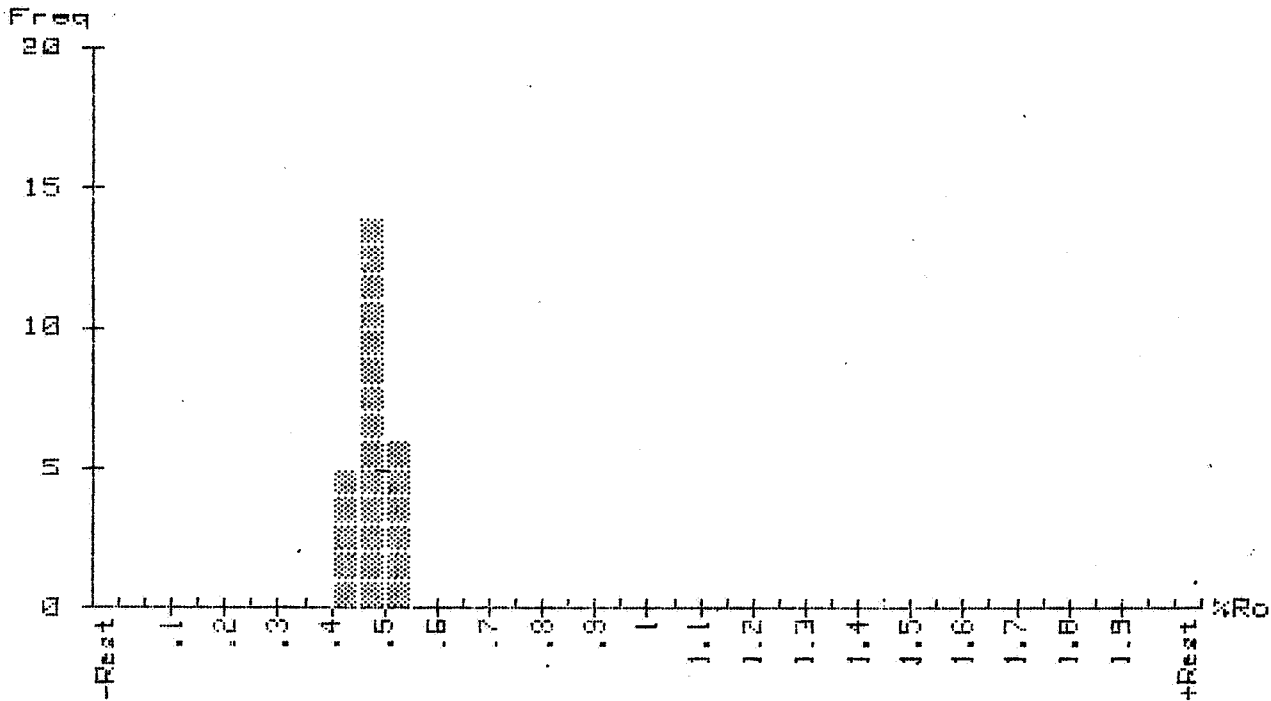


* Pop. 1 From .35 to .55 Mean= .43 St.D= .04 Total= 25

No. of Measurements: 25
 Mean: .431
 Standard Deviation: .042
 Coeff. of Variation: .0966

	1	2	3	4	5	6	7	8	9	10
0	.359	.371	.371	.374	.379	.390	.412	.416	.418	.421
10	.427	.429	.435	.436	.439	.441	.442	.453	.457	.459
20	.468	.485	.489	.499	.510					

Sample No.: 11139 | 1A |
 Well Name: 133/12-7 |
 Depth: 13047.40 m, CORE |
 Analyst: T. THRONSEN |
 Date: 109.06.1989 |

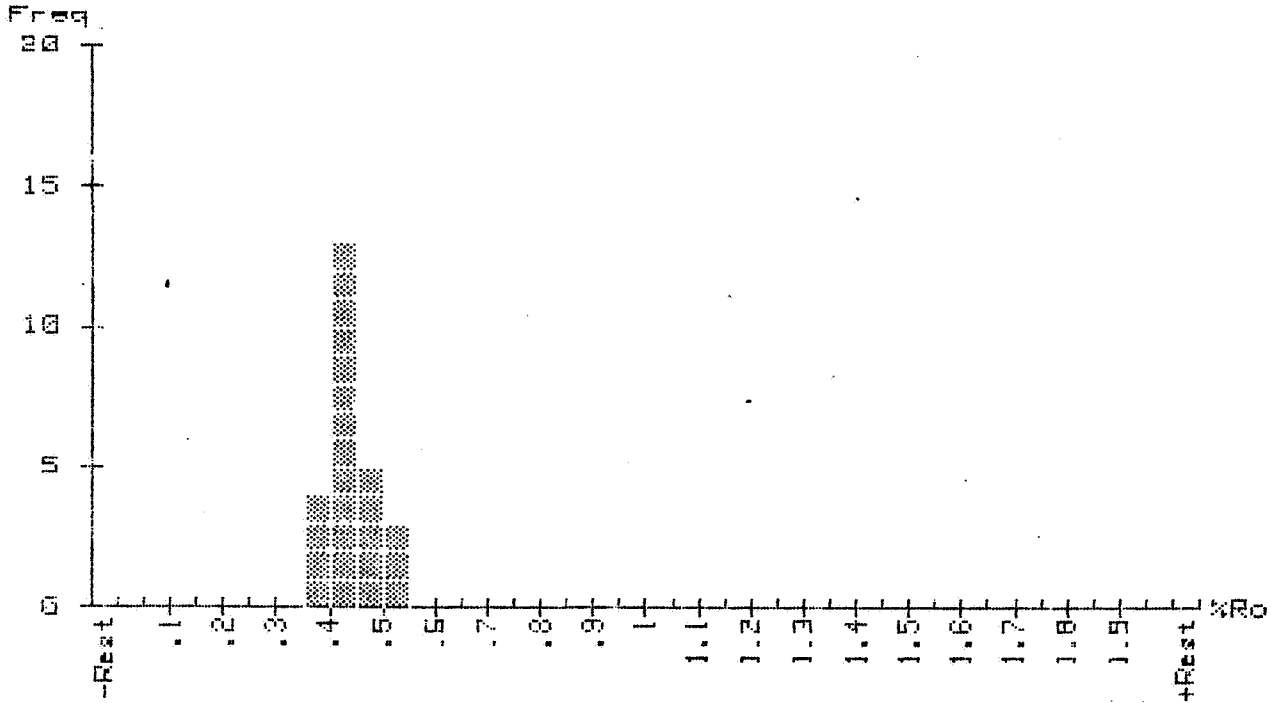


* Pop. 1 From .40 to .55 Mean= .48 St.D= .03 Total= 25

No. of Measurements: 25
 Mean: .476
 Standard Deviation: .035
 Coeff. of Variation: .0732

	1	2	3	4	5	6	7	8	9	10
0	.415	.423	.431	.437	.441	.454	.456	.459	.460	.464
10	.465	.467	.467	.470	.478	.489	.489	.491	.500	.506
20	.510	.514	.520	.539	.549					

Sample No.: 11140 | 1A1
 Well Name: 133/12-7 |
 Depth: 13050.65 |
 Analyst: T. THRONSEN |
 Date: 109.06.1989 |

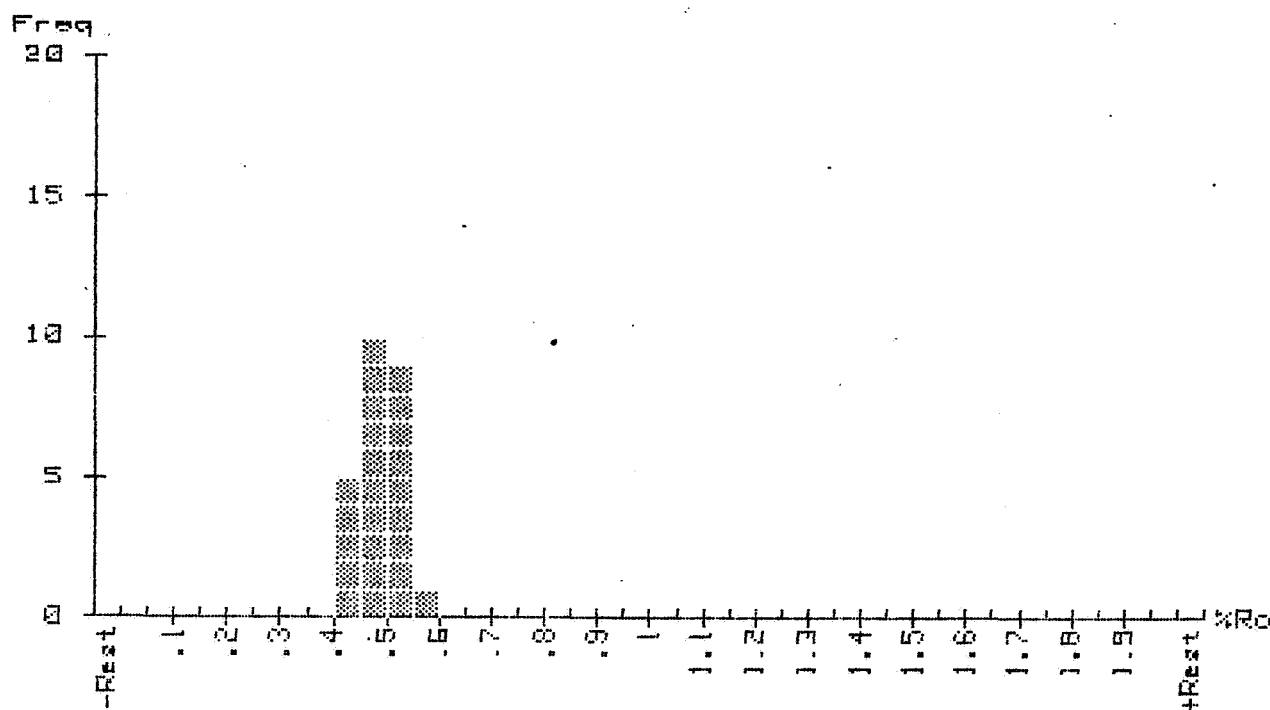


* Pop. 1 From .35 to .55 Mean= .44 St.D= .04 Total= 25

No. of Measurements: 25
 Mean: .442
 Standard Deviation: .040
 Coeff. of Variation: .0912

	1	2	3	4	5	6	7	8	9	10
0	.387	.388	.389	.391	.405	.418	.419	.420	.424	.424
10	.426	.429	.430	.436	.440	.440	.448	.463	.468	.474
20	.483	.485	.501	.520	.531					

Sample No.: 11141 | 1A1
 Well Name: 133/12-7 |
 Depth: 13051.55 m, CORE |
 Analyst: T. THRONSEN |
 Date: 109.06.1989 |



* Pop. 1 From .40 to .60 Mean= .49 St.D= .03 Total= 25

No. of Measurements: 25
 Mean: .485
 Standard Deviation: .035
 Coeff. of Variation: .0712

	1	2	3	4	5	6	7	8	9	10
0	.410	.435	.441	.448	.449	.451	.454	.469	.470	.474
10	.478	.481	.491	.494	.498	.505	.506	.508	.512	.514
20	.515	.516	.523	.534	.550					

APPENDIX B

SAMPLE DESCRIPTION

WELL : 33/12-7

DESCRIBED BY : A.B. Fløtre

DATE : 06.06.89

Sample	Depth	TOC	Lithology (rock name, mod, lith, col, size, sort, round matrix, cement, hard, acc, foss, por, cont.)
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S3730	2931m	65 %	Claystone, grey to dark brown grey, firm, sl. silty to silty, micromicaceous.
		20 %	Limestone, offwhite to light grey, soft to firm, occ. pyrite.
		15 %	Marl, red brown, firm.
		TR :	Pyrite.
S3731	2934m	75 %	Claystone, grey to dark brown grey, firm, sl. silty to silty, micromicaceous, sl. calcareous.
		10 %	Limestone, offwhite to light grey, soft to firm, occ. pyrite.
		5 %	Marl, red brown, firm.
		TR :	Pyrite.
S3732	2937m	100 %	Claystone, dark brown grey, occ. grey, firm, sl. silty, micromicaceous, non to sl. calcareous.
		TR :	Red brown claystone, limestone, pyrite, mica.
S3733	2940m	100 %	Claystone, grey to dark brown grey, firm to mod. hard, sl. silty to silty, micromicaceous, non to sl. calcareous.
		TR :	Red brown claystone, limestone, pyrite, mica.
S3734	2943m	100 %	Claystone, dark brown grey, firm, sl. silty, micromicaceous.
		TR :	Red brown claystone, pyrite, limestone, mica.
S3735	2946m	100 %	Claystone, dark brown grey, occ. grey, firm to mod. hard, sl. silty, micromicaceous.
		TR :	Red brown claystone, limestone, pyrite, mica.
S3736	2949m	100 %	Claystone, dark brown grey, occ. grey, firm to mod. hard, sl. silty, micromicaceous.
		TR :	Limestone, red brown claystone, pyrite, mica.
S3737	2952m	100 %	Claystone, dark brown grey, occ. green grey, firm, sl. silty, sl. calcareous, micromicaceous.
		TR :	Limestone, red brown claystone, mica.
S3738	2955m	100 %	Claystone, dark brown grey, occ. green grey, firm, sl. silty, sl. calcareous, micaceous.
		TR :	Limestone, red brown claystone, mica, pyrite.
S3739	2958m	100 %	Claystone, dark grey, occ. green grey, firm, sl. silty, micaceous.
		TR :	Limestone, red brown claystone, pyrite, mica.

SAMPLE DESCRIPTION

WELL : 33/12-7

DESCRIBED BY: A.B. Fløtre

DATE : 06.06.89

Sample	Depth	TOC	Lithology (rock name, mod, lith, col, size, sort, round matrix, cement, hard, acc, foss, por, cont.)
S3740	2961m	100 %	Claystone, dark grey, occ. grey, green grey, mod. hard, sl. silty, micaceous. TR : Limestone, red brown claystone, pyrite, mica.
S3741	2964m	100 %	Claystone, dark grey, occ. grey, green grey, mod. hard, sl. silty, micaceous. TR : Limestone, red brown claystone, pyrite, mica.
S3742	2967m	100 %	Claystone, dark grey, occ. grey, green grey, mod. hard, sl. silty, micromicaceous. TR : Limestone, red brown claystone, pyrite, mica.
S3743	2970m	100 %	Claystone, dark grey, occ. grey, firm, silty, micromicaceous. TR : Limestone, pyrite, mica.
S3744	2973m	100 %	Claystone, dark grey occ. olive grey, firm, silty, sl. calcareous, micaceous. TR : Limestone, pyrite, mica.
S3745	2976m	100 %	Claystone, dark grey to grey occ. green grey, firm, sl. silty, sl. calcareous, micromicaceous. TR : Limestone, pyrite.
S3746	2979m	100 %	Claystone, dark grey occ. olive grey, firm, silty, sl. calcareous, occ. sl. carbonaceous, micaceous. TR : Limestone, pyrite, mica.
S3747	2982m	100 %	Claystone, dark brown grey to grey, firm, sl. silty, sl. calcareous, micromicaceous. TR : Limestone, pyrite.
S3748	2985m	100 %	Claystone, grey to green grey, firm, occ. sl. silty, sl. calcareous. TR : Limestone, pyrite, mica.
S3749	2988m	100 %	Claystone, grey to olive grey, occ. dark grey, firm, sl. silty, sl. calcareous, micromicaceous. TR : Limestone, mica, pyrite.

SAMPLE DESCRIPTION

WELL : 33/12-7

DESCRIBED BY : A.B. Fløtre

DATE : 06.06.89

Sample	Depth	TOC	Lithology (rock name, mod, lith, col, size, sort, round matrix, cement, hard, acc, foss, por, cont.)
S3750	2991m	100 %	Claystone, dark grey to grey, firm, sl. silty, sl. calcareous, micromicaceous. TR : Limestone, mica, pyrite.
S3751	2994m	85 % 15 %	Claystone, dark grey to grey, firm, sl. silty, micromicaceous. Limestone, offwhite to l. grey, occ. l. brown, firm. TR : Pyrite.
S3752	2997m	70 % 30 %	Claystone, dark grey to grey, firm, sl. silty, micromicaceous. Limestone, offwhite to l. grey, occ. l. brown, soft-firm, micromicaceous. TR : Pyrite.
S3753	3000m	90 % 10 %	Claystone, dark grey to grey, firm, sl. silty, occ. sl. calcareous, micromicaceous. Limestone, offwhite to l. grey, occ. l. brown, soft-firm. TR : Pyrite, dolomite, red brown claystone.
S3754	3003m	80 % 20 %	Claystone, dark grey to grey, firm, silty, occ. sl. calcareous, v. sl. micromicaceous. Limestone, offwhite to yellow brown, occ. red brown, soft-firm. TR : Often dolomite, pyrite.
S3755	3006m	90 % 10 %	Claystone, dark grey to grey, firm to mod. hard, silty, sl. calcareous, micromicaceous. Limestone, offwhite to l. yellow brown, soft-firm. TR : Dolomite, pyrite.
S3756	3009m	90 % 10 %	Claystone, dark grey to grey, firm, silty, sl. calcareous, micromicaceous. Limestone, offwhite, occ. red brown, soft-firm. TR : Dolomite, pyrite.
S3757	3012m	90 % 10 %	Claystone, dark grey to grey, firm, silty, sl. calcareous, micromicaceous. Limestone, offwhite to l. yellow, occ. red brown, soft-firm. TR : Dolomite, pyrite.

SAMPLE DESCRIPTION

WELL : 33/12-7

DESCRIBED BY : A.B. Fløtre

DATE : 06.06.89

Sample	Depth	TOC	Lithology (rock name, mod, lith, col, size, sort, round matrix, cement, hard, acc, foss, por, cont.)
S3758	3015m		90 % Claystone, dark grey to grey, firm, silty, sl. calcareous, micaceous. 10 % Limestone, offwhite to l. yellow brown, soft-firm. TR : Dolomite, pyrite.
S3759	3018m		95 % Claystone, dark grey to grey, firm, silty, sl. calcareous, micaceous. 5 % Limestone, offwhite to l. yellow brown, occ. red brown, soft-firm. TR : Dolomite, pyrite.
S3760	3021m		95 % Claystone, grey to dark grey, firm, silty, sl. calcareous, micromicaceous. 5 % Limestone, offwhite to l. yellow brown, occ. red brown, soft-firm. TR : Dolomite, pyrite.
S3761	3024m		100 % Claystone, grey to dark grey, firm to mod. hard, sl. silty, sl. calcareous, micaceous. TR : Sand, limestone, dolomite, pyrite.
S3762	3027m		90 % Claystone, grey to dark grey, firm, silty, sl. calcareous, micromicaceous. 10 % Sand. TR : Limestone, dolomite, pyrite.