

4.1.6.2 Mud

The intermediate logging in the Brent Group was performed in a Bentonite/lignosulphonate mud with the characteristics as given below.

Rm = 0.511 ohm.m at 24°C	density	=	1.02 g/cm ³
Rmf = 0.241 ohm.m at 21°C	viscosity	=	58.0 s
Rmc = 1.490 ohm.m at 21°C	pH	=	11.0
	fluid loss	=	3.8 cm ³
	Barite	=	26%
	Potassium	=	0%

4.3 RFT MEASUREMENTS AND SAMPLING, 25/2-12

The RFT logging was performed 16.10.88. Two runs were made. During the first run, 19 valid pressure points, including two points characterized as supercharged, were taken. In addition; 1 point was tight. The second run was a sampling run; one segregated sample was taken at 3697.2 m RKB.

A separate run was carried out to perform fluid sampling. The sampling was performed with the strain gauge only for pressure readings. A segregated sample was taken at 3697.2 m RKB, by first filling the 2 3/3 gal chamber and then the 1 gal chamber.

The big chamber was drained on drill floor and contained:

- 3.5 l of filtrate
- 1 l of condensate/oil
- 1.8 m³ of gas at drill floor conditions

The 1 gal chamber was sealed of and sent to laboratory for analysis.

Table 4.3.1

RFT PRESSURE MEASUREMENTS, 25/2-12

DEPTH		PRESSURE			COMMENTS
m RKB	m MSL	Formation	Hydrost.bef	Hydrost.aft	
		bara	bara	bara	
3687.0	3665.0	669.09	683.0	682.8	
3687.0	3665.0	669.17	682.7	682.7	
3688.0	3666.0	669.26	682.9	682.8	
3689.4	3667.4	671.60	683.1	683.0	SUPERCHARGED
3692.3	3670.3	669.57	683.5	683.3	
3692.7	3670.7	669.87	683.7	683.6	SUPERCHARGED
3693.9	3671.9	669.75	683.7	683.7	
3694.3	3672.3	669.54	683.9	683.8	
3696.0	3674.0	669.44	683.9	684.0	
3697.2	3675.2	669.58	684.3	684.3	SAMPLING DEPT
3698.5	3676.5	669.82	684.5	684.5	
3698.5	3676.5	669.80	684.6	684.6	
3703.0	3681.0	670.18	685.2	685.2	
3706.0	3684.0	670.47	685.7	685.7	
3711.7	3689.7	670.93	686.5	686.5	
3744.0	3722.0	674.14	692.2	692.2	
37553.	3731.5	-	-	-	TIGHT
3763.2	3741.2	676.54	695.7	695.7	
3782.0	3760.0	678.36	699.5	698.8	
3797.5	3775.5	679.96	702.1	701.8	

4.5 FLUIDS, 25/2-12

Only one fluid sample is available, from well 25/2-12, that is the segregated RFT sample taken in the hydrocarbon zone at 3697.2 m RKB (3675.2 m MSL) It was not possible to recover any samples during testing (chapter 4.2) due to operational problems.

The 1 gal chamber from the RFT segregated sample was sealed off and sent to GECO Laboratory for analysis.

A single flash composition analysis and a constant mass expansion was performed the main results are given in table 4.5.1 below. The composition and liquid drop out curve can be found in appendix 4.2.

Table 4.5.1 Main PVT results

Reservoir conditions: 670 bara, 125°C

Flash conditions: 700 bara, 105°C to atmosphere and 15 °C

Reservoir fluid type	:	gas/condensate
Dew point pressure at 125°C	:	534 bara
Fluid density at reservoir conditions	:	413.1 kg/m ³
Condensate density, stock tank at 15°C	:	818.3 kg/m ³
Gas gravity	:	0.744
Flash GOR	:	1467 Sm ³ /Sm ³

4.9.4.2 Mud

The reservoir section was drilled with a Bentonite - Lignosulphonate mud with the following characteristics:

Density	=	1.95 g/cm ³
Salinity	=	8.5 g/l
Barite	=	28%
pH	=	11.6
Viscosity	=	58.0 _s

4.10 DST 25/2-12A

4.10.1 Introduction

Two tests were planned in order to investigate the fluid properties and the productivity vs depth. However, due to operational problems, only one test in the lower part of the formation was carried out.

The objectives of the test were :

- fluid sampling
- reservoir characteristics/productivity
- initial reservoir conditions
- boundaries

The tested interval was 3795 - 3805 mRKB (3653.8 - 3660.6 mMSL).

The test lasted 27 hours and gas-condensate was produced.

The test zone appeared to have low permeability, only around 5 mD.

4.10.3 Equipment

The test string is shown in P1 4.10.1 with components, depths and diameters. A total number of six pressure gauges were run in the test string :

GAUGE	LOCATION	STATUS
AMERADA	NIPPLE BELOW PACKER	LEFT IN HOLE
FLOPETROL FHPR-A (STRAIN)	NIPPLE BELOW PACKER	LEFT IN HOLE
FLOPETROL SDP (STRAIN)	CARRIER ABOVE PACKER	NO READINGS
FLOPETROL SDP (STRAIN)	CARRIER ABOVE PACKER	WORKED, OK
GEOSERVICES TERRATEK	CARRIER ABOVE PACKER	WORKED, OK
GEOSERVICES TERRATEK	CARRIER ABOVE PACKER (READING ANNULUS PRESSURE)	WORKED, OK

Two gauges read successfully the bottom hole testing pressure with good agreement between the two.

For PVT sampling the service company Petrotech was used. It ensured a good quality control of the sampling process. This company also provides the service of utilizing the "isokinetic technique" for separator gas sampling, which is supposed to allow quantification of the separator liquid carry over.

4.10.4 Flow/pressure results

The flow and pressure results are summarized in the table below:

CHOKE	1/64"	8	12	14
DURATION	hrs min	5 h 20'	5 h 55'	1 h 26'
Qo	Sm ³ /d	33	82	111
Qg	Sm ³ /d	63000	144000	198000
GOR	Sm ³ /Sm ³	1900	1750	1780
Pwf	bara	612	557	520
ΔPwf (draw down)	bar	47.6	102.5	139.5
Pwh	bara	461	412	377
Pwh-bh	bar	151	145	143
Twh	deg C	13.1	12.5	18.8
Psep	bara	35.2	35.2	35.4
Tsep	deg C	62.8	61.8	66.6

4.12 FLUIDS 25/2-12A

4.12.1. Samples available

During the DST separator recombination samples were taken during flow on two choke sizes:

Choke	Sample sets (1 oil bottle + 2 gas bottles)
8/64"	1
12/64"	3 + 1 isokinetic gas bottle

4.12.2 PVT

At present (June 1989) 1 sample has been analyzed in laboratory (GECO). The analysis programme consisted of a single flash and a constant mass expansion. The main results are given below. The composition and liquid drop out curve can be found in appendix 4.3.

No results are yet available for the isokinetic sample.

Table 4.12.1 Main PVT results

Reservoir conditions	:	670 bara, 125°C
Flash conditions	:	670 bara, 125°C to atmosphere, 5°C
Reservoir fluid type	:	gas/condensate
Dew point pressure at 125°C	:	574 bara
Fluid density, reservoir conditions	:	404.6 kg/m ³
Condensate density, stock tank 15°C	:	815.7 kg/m ³
Gas gravity (air = 1)	:	0.713
Flash GOR	:	1688.9 Sm ³ /Sm ³



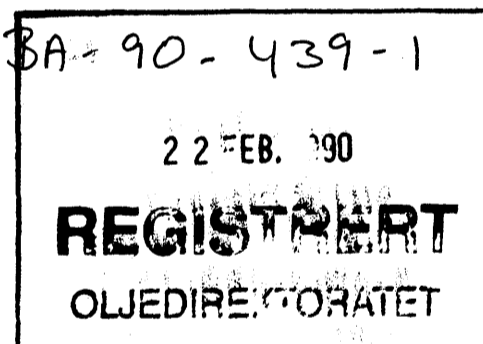
EP/S/EXP/Lab.Pau n° 89-228RP

Pau, November 1989

WELL 25/2-12, NORWAY

*Follow-up organic geochemical study
of the Jurassic*

EP/S/EXP/Lab.Pau n° 89-228RP



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TABLES

LEGENDS OF TABLES AND FIGURES OF ORGANIC INVENTORY ANALYSES : ABBREVIATIONS, UNITS AND CUT OFFS

SAMPLE TYPE :

[ND=unwashed cuttings; DE=cuttings washed on site. The cuttings are washed or washed anew in the laboratory]

[CA=core; CL=sidewall core; TE=outcrop; BO=mud; XX=other or undetermined]

Q1 : Contaminations or cavings, affecting the Rock Eval and TOC analyses [I=high; M=medium; F=low;]

Q2 : Contaminations or cavings, affecting the organic extract [N=null or not detected]

IR : Insoluble residue after HCl attack (% weight of rock)

LECO TOC : Total organic carbon (% weight of rock)

ANALYSIS IOC : Insoluble organic carbon in chloroform (% weight of rock)

OC : Organic carbon without precision (total or insoluble)

ROCK EVAL Carried out on : [generally not performed if OC < .3%]

ANALYSIS RT : Total rock

RI_RT : Insoluble residue after HCl attack

RE : Rock extracted with chloroform

RI_RE : Rock extracted with chloroform, and after HCl attack

Measured parameters : [# : result not given because meaningless; <S : lower than the detection threshold]

Tmax : Temperature of S2 peak (°C) [meaningless if S2 small]

S1 : Free hydrocarbons in the rock (mgHC/g of rock) [meaningless if the analysis is performed on the extracted rock]

S2 : Hydrocarbons yielded by pyrolysis (mgHC/g of rock)

S3 : CO2 yielded by pyrolysis (mg CO2/g of rock)

Calculated parameters :

PI : Production Index = $S1/(S1+S2)$ [# : meaningless if S1 and S2 < .2]

HI : Hydrogen Index = $(S2/OC) \times 100$ (mg HC/g OC)

OI : Oxygen Index = $(S3/OC) \times 100$ (mg CO2/g OC) .. [to be used with caution for analyses carried out on RT or RE if OC < 2%;

IO>170 : mineral contribution to S3 peak]

IATROSCAN Fast and non preparative analysis of the chloroformic extract (quantity and composition)

ANALYSIS EOM: Extractable organic matter with chloroform (% weight of rock) [<S if lower than .01%]

Normalized composition of the extract (% EOM) : [not performed if EOM < .03%]

SAT: Saturated hydrocarbons

ARO: Aromatic hydrocarbons

POL: Polar compounds (Resins+Asphaltenes)

HC : SAT+ARO (mg HC/g of rock)

TABLE: 1 25/2-12

DESCRIPTION OF ANALYSED SAMPLES AND ORGANIC CARBON CONTENT

LAB. REF.	SAMPLE TYPE	DEPTHS Metres		IR %	TOC %	Follow up	LITHOLOGY
B13636	ND	3580.00	3585.00	47.8	.65		SANDSTONE AND CALCAREOUS SHALE GREY
B13637	ND	3590.00	3595.00	37.5	.52		SANDSTONE AND CALCAREOUS SHALE GREY
B13638	ND	3600.00	3605.00	50.8	.92		SANDSTONE AND CALCAREOUS SHALE GREY
B13162	CL	3602.00			1.15		SHALE MEDIUM TO DARK GREY, SILTY, SOFT-FIRM, MICROMICACEOUS
B13639	ND	3610.00		40.7	.82		SANDSTONE AND CALCAREOUS SHALE GREY
B13164	CL	3615.00			.98		SHALE MEDIUM GREY, OCC. BROWNISH GREY, SILTY, FIRM, MICROMICACEOUS
B13640	ND	3615.00		48.9	1.17		SHALE DARK GREY, SILTY, CALCAREOUS
B13641	ND	3620.00		72.1	3.68	x	SHALE DARK GREY, SILTY, CALCAREOUS
B13642	ND	3630.00		78.6	7.23	x	SHALE DARK GREY, SILTY, CALCAREOUS
B13643	ND	3635.00		51.4	1.36		SHALE DARK GREY, SILTY, CALCAREOUS
B13644	ND	3640.01	3645.00	64.6	1.32		SHALE DARK GREY, SILTY, CALCAREOUS
B13165	CL	3648.00			2.64		SHALE DARK TO BROWN GREY, SILTY
B13645	ND	3650.00	3655.00	69.0	2.02	x	SHALE DARK GREY, SILTY, CALCAREOUS
B13646	ND	3660.00	3665.00	72.6	2.44	x	SHALE DARK GREY, SILTY, CALCAREOUS
B13167	CL	3665.00			2.98		SHALE DARK GREY TO DARK BROWNISH GREY, SILTY, FIRM, MICROMICACEOUS
B13647	ND	3670.00	3680.00	61.2	2.18	x	SHALE DARK GREY, SILTY, CALCAREOUS
B13648	ND	3695.00		82.8	2.54		SHALE DARK GREY, SILTY
B13615	CA03	3713.90	3714.00	94.6	4.86	x	SHALE BLACK, 40 cm INTERBEDDED IN SANDSTONE
B13649	ND	3718.00		84.7	3.30		SHALE DARK GREY, SILTY
B13650	ND	3720.00		90.9	14.10		SHALE BLACK, COAL
B13651	ND	3723.00		95.5	50.46	x	SHALE BLACK, COAL
B13652	ND	3730.00		60.5	1.11		SHALE BROWN-GREY, CARBONATED
B13653	ND	3733.00	3738.00	88.2	47.14	x	SHALE BLACK, COAL
B13654	ND	3805.00		58.1	1.00		SHALE GREY, CARBONATED, SILTY
B13655	ND	3810.00	3815.00	59.3	1.02		SHALE GREY, CARBONATED, SILTY
B13656	ND	3825.00		83.7	2.24		SHALE DARK GREY, SILTY
B13657	ND	3830.00		82.4	1.71		SHALE DARK GREY, SILTY
B13658	ND	3835.00		83.2	2.05		SHALE DARK GREY, SILTY
B13659	ND	3840.00		78.9	1.93		SHALE DARK GREY, SILTY
B13660	ND	3845.00		80.9	2.04		SHALE DARK GREY, SILTY
B13661	ND	3850.00	3855.00	82.9	1.96	x	SHALE DARK GREY, SILTY
B13662	ND	3860.01	3865.00	49.5	.24		SANDSTONE SLIGHTLY SHALY, CARBONATED
B13663	ND	3900.00		77.7	1.83		SHALE DARK GREY, SILTY
B13664	ND	3903.00	3908.00	83.5	2.02		SHALE DARK GREY, SILTY
B13665	ND	3910.00	3915.00	88.1	2.00		SHALE DARK GREY, SILTY
B13666	ND	3920.00	3923.00	90.0	2.35		SHALE DARK GREY, SILTY
B13170	CL	3925.00			1.18		SHALE DARK GREY-BROWNISH DARK GREY, FIRM, SILTY, VERY MICROMICACEOUS
B13667	ND	3930.00		83.6	1.61		SHALE DARK GREY, SILTY
B13668	ND	3933.00	3938.00	85.4	2.11		SHALE DARK GREY, SILTY
B13616	CA04	3943.30	3943.43	83.6	.68		SILSTONE DARK GREY
B13617	CA04	3943.88	3944.00	85.4	.72		SILSTONE DARK GREY
B13618	CA04	3944.34	3944.47	87.5	.75	x	SILSTONE DARK GREY
B13619	CA04	3944.81	3944.92	86.9	.76		SILSTONE DARK GREY
B13620	CA04	3945.25	3945.36	86.3	.72		SILSTONE DARK GREY
B13621	CA04	3945.76	3945.85	84.6	.83		SILSTONE DARK GREY

TABLE: 1 (Continued) 25/2-12

DESCRIPTION OF ANALYSED SAMPLES AND ORGANIC CARBON CONTENT

LAB. REF.	SAMPLE TYPE	DEPTHS Metres		IR %	TOC %	Follow-up	LITHOLOGY
B13622	CA04	3946.30	3946.40	89.5	.82	x	SILSTONE DARK GREY
B13623	CA04	3946.81	3946.93	89.5	.75		SILSTONE DARK GREY
B13624	CA04	3947.27	3947.38	90.9	.95		SILSTONE DARK GREY
B13625	CA04	3947.77	3947.90	85.8	.99		SILSTONE DARK GREY
B13626	CA04	3948.07	3948.20	85.8	.94		SILSTONE DARK GREY
B13627	CA04	3948.59	3948.72	85.4	.91		SILSTONE DARK GREY
B13628	CA04	3949.12	3949.24	86.9	.90		SILSTONE DARK GREY
B13629	CA04	3949.94	3949.94	88.6	.97		SILSTONE DARK GREY
B13630	CA04	3950.10	3950.20	88.4	.98	x	SILSTONE DARK GREY
B13631	CA04	3950.72	3950.86	89.0	.68		SILSTONE DARK GREY
B13632	CA04	3951.00	3951.11	88.8	.55		SILSTONE DARK GREY
B13633	CA04	3951.77	3951.90	88.1	.50		SILSTONE DARK GREY
B13669	ND	3955.00	3958.00	76.5	2.00	x	SHALE DARK GREY, SILTY
B13670	ND	3960.00	3963.00	76.9	1.51		SHALE DARK GREY, SILTY
B13671	ND	3968.00	3970.00	76.7	1.47		SHALE DARK GREY, SILTY
B13672	ND	3973.00	3975.00	74.4	1.28		SHALE DARK GREY, SILTY
B13673	ND	3978.00	3980.00	76.1	1.48		SHALE DARK GREY, SILTY
B13172	CL	3980.00			.96		SHALE DARK GREY-BROWNISH DARK GREY, FIRM, SILTY, MICROMICACEOUS
B13674	ND	3983.00	3985.00	78.7	1.75		SHALE DARK GREY, SILTY
B13634	CA05	3998.85	3998.96	97.8	33.17	x	SHALE BLACK, LIGNITIC AND CARBONACEOUS, INTERCALATION OF COAL VEINS
B13635	CA05	4018.50	4018.58	98.6	55.44	x	SHALE BLACK, LIGNITIC AND CARBONACEOUS, INTERCALATION OF COAL VEINS

TABLE: 2 25/2-12

RESULTS OF ORGANIC INVENTORY ANALYSIS

SAMPLE TYPE	DEPTHS Metres		Q1	on	Tmax	R O C K - E V A L						TOC	Follow-up	Q2	I A T R O S C A N						
						S1	S2	S3	PI	HI	OI				EOM	100(EOM/TOC)	SAT	ARO	POL	SAT/ARO	HC
ND	3580.00	3585.00	N	RI_RT	#	.40	.35	.23	.53	54	36	.65		N	.097	14.9	47.8	24.2	28.0	1.98	.70
ND	3590.00	3595.00	N	RI_RT	#	.17	.09	.20	#	17	38	.52		N	.019	3.7					
ND	3600.00	3605.00	N	RI_RT	#	.17	.13	.23	#	14	25	.92		N	.028	3.0					
CL	3602.00		N	RT	424	.32	.33	.77	.49	29	67	1.15		N	.066	5.7	46.0	29.3	24.7	1.57	.50
ND	3610.00		N	RI_RT	#	.19	.18	.19	#	22	23	.82		N	.081	9.9	47.3	27.3	25.1	1.73	.60
CL	3615.00		N	RT	426	.50	.52	.66	.49	53	67	.98		N	.158	16.1	45.4	30.6	24.0	1.48	1.20
ND	3615.00		N	RI_RT	432	.30	1.00	.22	.23	86	19	1.17		N	.131	11.2	35.0	34.1	30.9	1.03	.90
ND	3620.00		N	RI_RT	437	1.74	7.35	.40	.19	200	11	3.68	x	N	.481	13.1	34.4	35.9	29.7	.96	3.38
ND	3630.00		N	RI_RT	440	2.93	17.73	.35	.14	245	5	7.23	x	N	.781	10.8	32.4	42.3	25.3	.77	5.83
ND	3635.00		N	RI_RT	433	.25	.45	.26	.35	33	19	1.36		N	.131	9.6	37.9	31.9	30.2	1.19	.91
ND	3640.01	3645.00	N	RI_RT	424	1.09	.99	.31	.52	75	23	1.32		N	.369	28.0	52.2	25.7	22.1	2.03	2.88
CL	3648.00		N	RT	434	1.99	1.87	1.54	.52	71	58	2.64		N	.681	25.8	43.9	33.3	22.8	1.32	5.26
ND	3650.00	3655.00	N	RI_RT	438	1.08	2.14	.23	.34	106	11	2.02	x	N	.448	22.2	47.1	29.3	23.6	1.61	3.42
ND	3660.00	3665.00	N	RI_RT	443	1.11	3.55	.28	.24	146	11	2.44	x	N	.413	16.9	41.6	33.1	25.3	1.26	3.09
CL	3665.00		N	RT	434	1.20	1.40	.69	.46	47	23	2.98		N	.477	16.0	42.9	37.5	19.6	1.14	3.84
ND	3670.00	3680.00	N	RI_RT	439	.54	2.30	.29	.19	105	13	2.18	x	N	.299	13.7	39.6	34.2	26.2	1.16	2.21
ND	3695.00		N	RI_RT	442	1.20	2.96	.17	.29	116	7	2.54		N	.334	13.1	37.8	36.1	26.1	1.05	2.47
CA03	3713.90	3714.00	N	RI_RT	454	1.64	6.61	.45	.20	136	9	4.86	x	N	.366	7.5	30.3	43.8	25.9	.69	2.71
ND	3718.00		N	RI_RT	441	1.43	3.94	.30	.27	120	9	3.30		N	.345	10.5	33.8	36.8	29.4	.92	2.44
ND	3720.00		N	RI_RT	454	5.44	20.60	.35	.21	146	3	14.10		N	.808	5.7	17.1	50.7	32.2	.34	5.48
ND	3723.00		N	RI_RT	456	15.58	114.58	1.12	.12	227	2	50.46	x	N	2.188	4.3	15.4	51.2	33.4	.30	14.57
ND	3730.00		N	RI_RT	453	.48	1.00	.16	.33	90	14	1.11		N	.110	9.9	36.4	33.4	30.2	1.09	.77
ND	3733.00	3738.00	N	RI_RT	458	10.63	83.75	1.33	.11	178	3	47.14	x	N	1.584	3.4	16.4	54.7	28.9	.30	11.26
ND	3805.00		N	RI_RT	445	.11	.51	.20	.18	51	20	1.00		N	.137	13.7	38.6	34.2	27.2	1.13	1.00
ND	3810.00	3815.00	N	RI_RT	440	.17	.65	.19	.20	64	19	1.02		N	.080	7.8	43.1	31.0	25.9	1.39	.59
ND	3825.00		N	RI_RT	442	1.08	3.15	.43	.25	141	19	2.24		N	.274	12.2	40.8	36.2	23.0	1.13	2.11
ND	3830.00		N	RI_RT	444	.73	1.91	.36	.27	112	21	1.71		N	.204	11.9	42.0	36.4	21.6	1.15	1.60
ND	3835.00		N	RI_RT	441	.82	2.61	.37	.24	127	18	2.05		N	.249	12.1	41.3	36.5	22.2	1.13	1.94
ND	3840.00		N	RI_RT	440	.85	2.35	.32	.27	122	16	1.93		N	.293	15.2	38.2	37.6	24.2	1.02	2.22
ND	3845.00		N	RI_RT	441	1.02	2.90	.37	.26	142	18	2.04		N	.324	15.9	40.4	34.3	25.3	1.18	2.42
ND	3850.00	3855.00	N	RI_RT	439	1.18	2.97	.36	.28	152	19	1.96	x	N	.322	16.4	38.4	36.8	24.8	1.04	2.42
ND	3860.01	3865.00	N	RI_RT	444	.03	.12	.11	#	51	45	.24		N	.020	8.3					
ND	3900.00		N	RI_RT	441	.99	2.80	.42	.26	153	23	1.83		N	.305	16.7	39.5	38.0	22.5	1.04	2.36
ND	3903.00	3908.00	N	RI_RT	441	1.12	3.07	.51	.27	152	25	2.02		N	.288	14.3	38.8	36.5	24.7	1.06	2.17
ND	3910.00	3915.00	N	RI_RT	443	.77	2.32	.59	.25	116	30	2.00		N	.300	15.0	40.4	37.3	22.3	1.08	2.33
ND	3920.00	3923.00	N	RI_RT	448	.91	3.18	.62	.22	135	26	2.35		N	.328	14.0	42.2	37.1	20.7	1.14	2.60
CL	3925.00		N	RT	435	.39	.52	.82	.43	44	69	1.18		N	.120	10.2	46.9	29.8	23.3	1.57	.92
ND	3930.00		N	RI_RT	441	.48	1.64	.42	.23	102	26	1.61		N	.194	12.0	38.5	37.7	23.8	1.02	1.48
ND	3933.00	3938.00	N	RI_RT	443	.78	2.90	.55	.21	138	26	2.11		N	.256	12.2	41.3	37.3	21.4	1.11	2.01
CA04	3943.30	3943.43	N	RI_RT	454	.16	.37	.08	.30	54	12	.68		N	.034	5.0	52.4	24.9	22.7	2.10	.26
CA04	3943.88	3944.00	N	RI_RT	451	.20	.35	.03	.36	49	5	.72		N	.060	8.3	48.9	25.0	26.1	1.96	.44
CA04	3944.34	3944.47	N	RI_RT	454	.19	.48	.04	.29	64	5	.75	x	N	.063	8.4	51.2	25.2	23.6	2.03	.48
CA04	3944.81	3944.92	N	RI_RT	455	.21	.45	.02	.32	59	2	.76		N	.069	9.1	51.6	25.6	22.8	2.02	.53
CA04	3945.25	3945.36	N	RI_RT	452	.22	.41	.02	.34	58	2	.72		N	.050	6.9	51.6	25.6	22.8	2.02	.39
CA04	3945.76	3945.85	N	RI_RT	450	.23	.38	.03	.38	46	3	.83		N	.055	6.6	54.2	25.6	20.2	2.12	.44

TABLE: 2 (Continued) 25/2-12

RESULTS OF ORGANIC INVENTORY ANALYSIS

SAMPLE TYPE	DEPTHS Metres		Q1	on	Tmax	ROCK - EVAL						TOC	Follow-up	Q2	EOM	I A T R O S C A N					HC
						S1	S2	S3	PI	HI	OI					100(EOM/TOC)	SAT	ARO	POL	SAT/ARO	
CA04	3946.30	3946.40	N	RI_RT	455	.21	.56	.03	.27	67	3	.82	x	N	.058	7.1	54.4	23.9	21.7	2.28	.45
CA04	3946.81	3946.93	N	RI_RT	454	.19	.36	.03	.34	48	4	.75		N	.049	6.5	55.5	25.9	18.6	2.14	.40
CA04	3947.27	3947.38	N	RI_RT	453	.21	.37	.04	.36	39	4	.95		N	.062	6.5	53.7	26.3	20.0	2.04	.50
CA04	3947.77	3947.90	N	RI_RT	456	.20	.57	.04	.26	58	4	.99		N	.063	6.4	52.0	26.7	21.3	1.95	.50
CA04	3948.07	3948.20	N	RI_RT	455	.22	.57	.03	.28	60	4	.94		N	.072	7.7	54.2	26.6	20.2	2.04	.58
CA04	3948.59	3948.72	N	RI_RT	453	.23	.53	.03	.30	58	3	.91		N	.071	7.8	53.4	26.0	20.6	2.05	.56
CA04	3949.12	3949.24	N	RI_RT	454	.25	.55	.03	.32	61	4	.90		N	.068	7.6	53.3	27.2	19.5	1.96	.55
CA04	3949.94	3949.94	N	RI_RT	454	.25	.57	.04	.30	58	4	.97		N	.067	6.9	50.0	29.5	20.5	1.69	.53
CA04	3950.10	3950.20	N	RI_RT	456	.23	.54	.02	.30	55	2	.98	x	N	.067	6.8	54.3	25.2	20.6	2.15	.53
CA04	3950.72	3950.86	N	RI_RT	451	.13	.25	0.00	.35	37	0	.68		N	.041	6.0	51.3	27.5	21.2	1.87	.32
CA04	3951.00	3951.11	N	RI_RT	450	.12	.21	0.00	.37	39	0	.55		N	.040	7.3	55.7	22.9	21.4	2.43	.31
CA04	3951.77	3951.90	N	RI_RT	452	.10	.16	0.00	#	32	0	.50		N	.021	4.2					
ND	3955.00	3958.00	N	RI_RT	442	.65	2.17	.28	.23	108	14	2.00	x	N	.239	12.0	43.1	33.5	23.4	1.29	1.83
ND	3960.00	3963.00	N	RI_RT	438	.41	1.49	.12	.21	98	8	1.51		N	.168	11.1	42.8	34.7	22.5	1.23	1.30
ND	3968.00	3970.00	N	RI_RT	442	.31	1.07	.15	.22	72	10	1.47		N	.159	10.8	43.9	33.9	22.2	1.29	1.24
ND	3973.00	3975.00	N	RI_RT	442	.28	.80	.13	.26	62	10	1.28		N	.120	9.4	41.1	35.8	23.1	1.15	.92
ND	3978.00	3980.00	N	RI_RT	442	.33	.99	.07	.25	67	5	1.48		N	.146	9.9	41.3	36.4	22.3	1.13	1.13
CL	3980.00		N	RT	428	.13	.23	.60	.36	24	63	.96		N	.076	7.9	45.6	28.4	26.0	1.61	.56
ND	3983.00	3985.00	N	RI_RT	442	.54	1.47	.23	.27	84	13	1.75		N	.250	14.3	47.9	30.7	21.4	1.56	1.96
CA05	3998.85	3998.96	N	RI_RT	466	6.18	53.55	.99	.10	161	3	33.17	x	N	.726	2.2	16.8	47.6	35.6	.35	4.68
CA05	4018.50	4018.58	N	RI_RT	464	13.53	125.16	.92	.10	226	2	55.44	x	N	1.256	2.3	10.3	45.1	44.6	.23	6.96

TABLE: 3 25/2-5

DESCRIPTION OF ANALYSED SAMPLES AND ORGANIC CARBON CONTENT

LAB. REF.	SAMPLE TYPE	DEPTHS Metres	IR %	TOC %	Follow-up	L I T H O L O G Y
B18993	ND	3512.50	89.5	3.29	x	SHALE, DARK GREY TO BROWN, SILTY
B18994	ND	3565.00	88.2	3.39	x	SHALE, DARK GREY TO BROWN, SILTY

TABLE: 4 25/2-5

RESULTS OF ORGANIC INVENTORY ANALYSIS

SAMPLE TYPE	DEPTHS Metres	Q1	on	Tmax	R O C K - E V A L						TOC	Follow- up	Q2	EOM	I A T R O S C A N					HC
					S1	S2	S3	PI	HI	OI					100(EOM/TOC)	SAT	ARO	POL	SAT/ARO	
ND	3512.50	N	RI_RT	440	.84	7.06	.14	.11	215	4	3.29	x	N	.200	6.1	25.5	31.4	43.1	.81	1.14
ND	3565.00	N	RI_RT	442	.81	7.58	.22	.10	224	7	3.39	x	N	.172	5.1	25.3	24.3	50.4	1.04	.85

TABLE: 5 25/2-7

DESCRIPTION OF ANALYSED SAMPLES AND ORGANIC CARBON CONTENT

LAB. REF.	SAMPLE TYPE	DEPTHS Metres		IR %	TOC %	Follow-up	L I T H O L O G Y
B18995	ND	3838.00	3844.00	90.4	23.76	x	COAL, SHALE DARK GREY TO BROWN
B18996	ND	3866.00	3876.00	85.0	14.60	x	SHALE DARK GREY, COAL

TABLE: 6 25/2-7

RESULTS OF ORGANIC INVENTORY ANALYSIS

SAMPLE TYPE	DEPTHS Metres		Q1	on	Tmax	R O C K - E V A L						TOC	Follow- up	Q2	EOM	I A T R O S C A N					HC
						S1	S2	S3	PI	HI	OI					100(EOM/TOC)	SAT	ARO	POL	SAT/ARO	
ND	3838.00	3844.00	N	RI_RT	448	3.21	39.16	1.18	.08	165	5	23.76	X	N	.332	1.4	13.5	33.5	52.9	.40	1.56
ND	3866.00	3876.00	N	RI_RT	447	2.18	22.61	1.32	.09	155	9	14.60	X	N	.293	2.0	15.6	32.6	51.9	.48	1.41

TABLE 7 - CARBON ISOTOPE AND GAS CHROMATOGRAPHY RATIOS
25/2-12

DEPTH (m)	CARBON ISOTOPE per mil PDB			SATURATED HYDROCARBONS				AROMATIC HC		
	TOTAL EXTRACT	SAT	ARO	PR/ nC17	PH/ nC18	PR/PH	A/B	MPI1	MPI3	MP/ P
3620	-29.8	-30.3	-29.3	.59	.45	1.46	1.31	.48	.52	2.48
3630	-29.0	-30.2	-28.8	.61	.48	1.45	1.27	.47	.52	2.39
3650-55	-27.5	-28.4	-26.8	.74	.38	2.21	1.96	.54	.59	2.40
3660-65	-27.2	-28.6	-26.8	.70	.39	2.20	1.80	.50	.57	2.26
3670-80	-27.1	-28.4	-26.3	.60	.28	2.41	2.16	.53	.60	2.31
3713.9-14	-25.8	-27.6	-25.4	.59	.22	3.08	2.72	.64	.82	1.99
3723	-25.1	-27.7	-25.3	.56	.24	2.67	2.31	.59	.71	2.18
3733-38	-25.2	-27.6	-25.0	.53	.21	2.85	2.45	.60	.72	2.15
3850-55	-28.6	-29.3	-27.9	.65	.42	1.77	1.55	.55	.64	2.20
3944.3-.4	-26.8	-28.1	-26.0	.29	.11	2.71	2.62	.63	.75	2.27
3946.3-.4	-27.5	-28.8	-26.4	.24	.09	2.94	2.80	.65	.75	2.38
3950.1-.2	-26.5	-27.2	-25.8	.29	.12	2.53	2.44	.65	.76	2.35
3955-58	-27.7	-28.7	-27.3	.65	.37	2.05	1.73	.58	.67	2.27
3998.8-.9	-25.3	-27.0	-24.7	.66	.17	4.14	3.98	.73	.95	2.03
4018.5-.6	-26.4	-29.8	-25.6	.82	.12	7.47	6.83	.77	.99	2.11
FORMAT. LAB REF.	TOTAL OIL	SAT	ARO	PR/ nC17	PH/ nC18	PR/PH	A/B	MPI1	MPI3	MP/ P
3697.2	-27.0	-27.6	-26.0	.59	.24	2.81	2.45	.76	.88	2.60

SATURATED HYDROCARBON RATIOS :

PR = PRISTANE ; PH = PHYTANE

A = PRISTANE/nC17 ; B = PHYTANE/nC18

AROMATIC HYDROCARBON RATIOS :

MPI1 = $1.5(2MP+3MP)/(P+1MP+9MP)$

MPI3 = $(2-MP+3-MP)/(1-MP+9-MP)$

MP/P = SUM OF METHYL-PHENANTHRENES/PHENANTHRENE

TABLE 8 - CARBON ISOTOPE AND GAS CHROMATOGRAPHY RATIOS
25/2-5

DEPTH (m)	CARBON ISOTOPE per mil PDB			SATURATED HYDROCARBONS				AROMATIC HC		
	TOTAL EXTRACT	SAT	ARO	PR/ nC17	PH/ nC18	PR/PH	A/B	MPI1	MPI3	MP/ P
3512.5	-27.3	-28.7	-26.9	1.32	.52	3.04	2.55	.48	.56	2.06
3565	-27.2	-28.3	-26.7	1.35	.53	3.16	2.57	.43	.55	1.70

TABLE 9 - CARBON ISOTOPE AND GAS CHROMATOGRAPHY RATIOS
25/2-7

DEPTH (m)	CARBON ISOTOPE per mil PDB			SATURATED HYDROCARBONS				AROMATIC HC		
	TOTAL EXTRACT	SAT	ARO	PR/ nC17	PH/ nC18	PR/PH	A/B	MPI1	MPI3	MP/ P
3838-44	-25.1	-26.8	-24.6	10.06	1.20	8.78	8.41	.39	.52	1.50
3866-76	-25.3	-27.1	-24.9	4.80	.74	7.01	6.50	.44	.52	1.93

SATURATED HYDROCARBON RATIOS :

PR = PRISTANE ; PH = PHYTANE

A = PRISTANE/nC17 ; B = PHYTANE/nC18

AROMATIC HYDROCARBON RATIOS :

MP STANDS FOR METHYL-PHENANTHRENES WHICH OCCUR IN FOUR ISOMERS

1MP, 2MP, 3MP AND 9MP

MPI1 = $1.5 (2MP+3MP)/(P+1MP+9MP)$

MPI3 = $(2MP+3MP)/(1MP+9MP)$

MP/P = SUM OF METHYL-PHENANTHRENES/PHENANTHRENE

TABLE 10 - MAIN RESULTS OF OIL ANALYSIS

LAB. REFERENCE	B18748
RESERVOIR	
DEPTH (M)	3697.2
LITHOLOGY	SANDSTONE
BULK PROPERTIES	
SPECIFIC GR.	0.8184
API GRAVITY	41.57
SULFUR %	0.10
RESIDUE C14+ %	59.06
d13C (per mil PDB)	
TOTAL OIL	-27.0
SATURATES C14+	-27.6
AROMATICS C14+	-26.0
COMPOSITION OF RESIDUE C14+	
SATURATED HC	74.38
AROMATIC HC	24.43
RESINS	1.19
ASPHALTENES	0.00
TOTAL HC	98.81
SAT/ARO	3.04
COMPOSITION (TOTAL OIL)	
DISTILLATE %	40.94
C14+ SAT. HC	43.93
C14+ ARO. HC	14.43
RESINS	.70
ASPHALTENES	.00
GAS CHROMATOGRAPHY	
PR/PH	2.81
PR/nC17 = A	.59
PH/nC18 = B	.24
A/B	2.45
MPI-1	.76
MPI-3	.88
MP/P	2.60

PR = PRISTANE; PH = PHYTANE

MPI-1 = $1.5 (2MP+3MP)/(P+1MP+9MP)$

MPI-3 = $(2MP+3MP)/(1MP+9MP)$

MP/P = SUM OF METHYL-PHENANTHRENES/PHENANTHRENE

(3620 m, cuttings)

Annexes 1 to 5

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1740

Sample..... : 25/2-12 B13641. ST NO v
 Well Depth : 3620. to 3620. (Meters)
 Particularities II. : /
 Acquisition File Name : B13641STM Mag tape /
 Submitted by..... : KT July 21. , 1989.
 Particularities I... : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	9981.	C23	tricyclic.....	9850.
C22	4-Methyl Sterane	1247.	C24	tetracyclic.....	6710.
C22	Sterane.....	7192.	Ts.....		17678.
C27	S Diasterane.....	14025.	Tm.....		12545.
C27	aa S Sterane.....	7089.	29	ab Hopane.....	17108.
C27	bb R Sterane.....	11999.	30	ab Hopane.....	33076.
C27	bb S Sterane.....	11200.	30	ba Hopane.....	6273.
C27	aa R Sterane.....	6945.	31	ab S Homohopane..	13116.
C29	aa S Sterane.....	4128.	31	ab R Homohopane..	10834.
C29	bb R Sterane.....	8720.	32	ab S Homohopane..	9125.
C29	bb S Sterane.....	8720.	32	ab R Homohopane..	7128.
C29	aa R Sterane.....	4127.	TOTAL	TERPANES.....	295017.
TOTAL	STERANES.....	206847.			

O P T I O N A L A N A L Y S I S		Areas	O P T I O N A L A N A L Y S I S		Areas
C30	tricyclic, 22 S..	6843.	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	6273.	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	4500.			
C28	Bisnorhopane....	7800.			
C29/5 (RT. > 29 ab)..		13971.			
18 a(H) Oleanane....	ns		"X"		7984.
Gammacerane.....	ns		nC31		61999.
C33	ab S Homohopane.	nd	C27bb		59999.
C33	ab R Homohopane.	nd	C28bb		46999.
C35	Hexacyclic.....	ns	C29bb		45999.

RESULTS :

27	bb S / 27	aa R ..	1.61	C29	DHop / C29 Hop	0.26
27	aa S / 27	aa R --	1.02	C28	BNHop / C29 Hop-	0.45
27	S dia / 27	aa R	2.01	C29/5	/ C29 Hop.....	0.81
22	4-Me st / 27	aa R	0.17	18	aH Olean/C30 Hop.	v. low.
%	20 S C27		49.11	Gammacerane/C30	Hop.	v. low.
%	bb C27		62.30	30/3(R&S)	/ C29 Hop-	0.76
29	bb S / 29	aa R...	2.11	30/3(R&S)	/ 23/3.....	1.33
29	aa S / 29	aa R...	1.00	2	35Hex/C35Hop(R&S).	N / A
27	S dia / 29	aa R..	3.39	C35H(R&S)/C33H(R&S).		N / A
22	4-Me st / 29	aa R	0.30	29+30Hop/C35	H(R&S).	N / A
%	20 S C29		50.00			
%	bb C29		67.87			
21	st / 22	st	1.38			
22	4-Me st / 22	st--	0.17			
C29	H / C30	H.....	0.51	X/29H		0.46
Tm	/ Ts		0.70	nC31/C30H		1.87
23/3	/ 24/4		1.46	%nC31/100		0.10
%	22 S C31		54.76	%ST/100		0.36
%	22 S C32		56.14	%TT/100		0.52
ba	/ ab	---- X 100 -	18.96	%27bb/100		0.39
23/3	/ 21	st	0.98	%28bb/100		0.30
TT	/ ST		1.42	%29bb/100		0.30
				27-30H/29ST		3.12
				29bbR/29aaR		2.11

(3630 m, cuttings)

ANNEXES 6 to 10

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1747

Sample..... : 25/2-12 B13642. ST NO v
 Well Depth..... : 3630.00 to 3630.00 (Meters)
 Particularities II.. : /
 Acquisition File Name : B13642STM Mag tape /
 Submitted by..... : KT July 25. , 1989.
 Particularities I... : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	9742.	C23	tricyclic.....	7274.
C22	4-Methyl Sterane	1077.	C24	tetracyclic.....	5397.
C22	Sterane.....	6489.	Ts.....		16432.
C27	S Diasterane.....	13652.	Tm.....		11563.
C27	aa S Sterane.....	4049.	29	ab Hopane.....	20619.
C27	bb R Sterane.....	7087.	30	ab Hopane.....	38970.
C27	bb S Sterane.....	7087.	30	ba Hopane.....	6128.
C27	aa R Sterane.....	3746.	31	ab S Homohopane..	16515.
C29	aa S Sterane.....	2981.	31	ab R Homohopane..	13441.
C29	bb R Sterane.....	6913.	32	ab S Homohopane..	11799.
C29	bb S Sterane.....	6439.	32	ab R Homohopane..	8862.
C29	aa R Sterane.....	2981.	TOTAL	TERPANES.....	354805.
TOTAL	STERANES.....	232786.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	5000.	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	5000.	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	ns			
C28	Bisnorhopane....	8100.			
C29/5	(RT. > 29 ab)..	17244.			
18	a(H) Oleanane....	ns	"X"		10496.
Gammacerane.....		ns	nC31		69500.
C33	ab S Homohopane.	nd	C27bb		6300.
C33	ab R Homohopane.	nd	C28bb		4100.
C35	Hexacyclic.....	ns	C29bb		4800.

RESULTS :

27	bb S / 27	aa R ..	1.89	C29	DHop / C29 Hop	v. low.
27	aa S / 27	aa R --	1.08	C28	BNHop / C29 Hop-	0.39
27	S dia / 27	aa R	3.64	C29/5	/ C29 Hop.....	0.83
22	4-Me st / 27	aa R	0.28	18	aH Olean/C30 Hop.	v. low.
%	20 S C27		50.68	Gammacerane/C30	Hop.	v. low.
%	bb C27		64.51	30/3(R&S) / C29	Hop-	0.48
				30/3(R&S) / 23/3		1.37
29	bb S / 29	aa R...	2.15	2	35Hex/C35Hop(R&S).	N / A
29	aa S / 29	aa R...	0.99	C35H(R&S)/C33H(R&S).		N / A
27	S dia / 29	aa R..	4.57	29+30Hop/C35	H(R&S).	N / A
22	4-Me st / 29	aa R	0.36			
%	20 S C29		48.77			
%	bb C29		69.12			
21	st / 22	st.....	1.50			
22	4-Me st / 22	st--	0.16			
C29	H / C30	H.....	0.52	X/29H		0.50
Tm	/ Ts		0.70	nC31/C30H		1.78
23/3	/ 24/4		1.34	%nC31/100		0.10
%	22 S C31		55.13	%ST/100		0.35
%	22 S C32		57.10	%TT/100		0.53
ba	/ ab	----- X 100 -	15.72	%27bb/100		0.41
				%28bb/100		0.26
				%29bb/100		0.31
23/3	/ 21	st.....	0.74	27-30H/29ST		4.53
TT	/ ST		1.52	29bbR/29aaR		2.31

(3650-3655 m, cuttings)

ANNEXES 11 to 15

S N E A (P) Organic Geochemistry
Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1748

Sample..... : 25/2-12 B13645 ST NO v
Well Depth..... : 3650. to 3655. (Meters)
Particularities II.. : /
Acquisition File Name : B13645STM Mag tape /
Submitted by..... : KT july 25. , 1989.
Particularities I... : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	3370.	C23	tricyclic.....	6358.
C22	4-Methyl Sterane	360.	C24	tetracyclic.....	7301.
C22	Sterane.....	2176.	Ts.....		5911.
C27	S Diasterane.....	9319.	Tm.....		4092.
C27	aa S Sterane.....	3500.	29	ab Hopane.....	6138.
C27	bb R Sterane.....	6168.	30	ab Hopane.....	20915.
C27	bb S Sterane.....	6168.	30	ba Hopane.....	1136.
C27	aa R Sterane.....	3196.	31	ab S Homohopane..	4774.
C29	aa S Sterane.....	2960.	31	ab R Homohopane..	2955.
C29	bb R Sterane.....	8548.	32	ab S Homohopane..	4547.
C29	bb S Sterane.....	6579.	32	ab R Homohopane..	2046.
C29	aa R Sterane.....	3123.			
TOTAL STERANES		192595.	TOTAL TERPANES		162626.

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	3000.	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	3000.	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	1160.			
C28	Bisnorhopane.....	1160.			
C29/5	(RT. > 29 ab)..	3865.			
18	a(H) Oleanane.....	ns	"X"		2046.
Gammacerane.....		ns	nC31		53899.
C33	ab S Homohopane.	nd	C27bb		7600.
C33	ab R Homohopane.	nd	C28bb		4800.
C35	Hexacyclic.....	ns	C29bb		9600.

RESULTS :

27	bb S / 27	aa R ..	1.92	C29	DHop / C29 Hop	0.18
27	aa S / 27	aa R --	1.09	C28	BNHop / C29 Hop-	0.18
27	S dia / 27	aa R	2.91	C29/5	/ C29 Hop.....	0.62
22	4-Me st / 27	aa R	0.11	18	aH Olean/C30 Hop.	v. low.
%	20 S C27		50.79	Gammacerane/C30	Hop.	v. low.
%	bb C27		64.81	30/3(R&S) / C29	Hop-	0.97
29	bb S / 29	aa R...	2.10	30/3(R&S) / 23/3		0.94
29	aa S / 29	aa R...	0.94	2.35Hex/C35Hop	(R&S).	N / A
27	S dia / 29	aa R..	2.98	C35H(R&S)/C33H	(R&S).	N / A
22	4-Me st / 29	aa R	0.11	29+30Hop/C35	H(R&S).	N / A
%	20 S C29		44.97			
%	bb C29		71.31			
21	st / 22	st.....	1.54			
22	4-Me st / 22	st--	0.16			
C29	H / C30	H.....	0.29	X/29H		0.33
Tm	/ Ts		0.69	nC31/C30H		2.57
23/3	/ 24/4		0.87	%nC31/100		0.13
%	22 S C31		61.76	%ST/100		0.47
%	22 S C32		68.96	%TT/100		0.39
ba	/ ab	---- X 100 -	5.43	%27bb/100		0.34
23/3	/ 21	st.....	1.88	%28bb/100		0.21
TT	/ ST		0.84	%29bb/100		0.43
				27-30H/29ST		1.74
				29bbR/29aaR		2.73

(3660-3665 m, cuttings)

ANNEXES 16 to 20

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1749

Sample..... : 25/2-12 B13646 ST NO v
 Well Depth : 3660. to 3665. (Meters)
 Particularities II. : /
 Acquisition File Name : B13646STM Mag tape /
 Submitted by : KT July 26. , 1989.
 Particularities I. : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	3040.	C23	tricyclic.....	3607.
C22	4-Methyl Sterane	300.	C24	tetracyclic.....	4918.
C22	Sterane.....	1453.	Ts.....		8617.
C27	S Diasterane.....	6054.	Tm.....		4496.
C27	aa S Sterane.....	1191.	29	ab Hopane.....	6557.
C27	bb R Sterane.....	2750.	30	ab Hopane.....	12551.
C27	bb S Sterane.....	2750.	30	ba Hopane.....	1498.
C27	aa R Sterane.....	1236.	31	ab S Homohopane..	3747.
C29	aa S Sterane.....	1117.	31	ab R Homohopane..	2810.
C29	bb R Sterane.....	3351.	32	ab S Homohopane..	2248.
C29	bb S Sterane.....	2660.	32	ab R Homohopane..	1498.
C29	aa R Sterane.....	1064.	TOTAL	TERPANES.....	191513.
TOTAL	STERANES.....	85180.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	ns	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	ns	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	ns			
C28	Bisnorhopane....	986.			
C29/5	(RT. > 29 ab)..	5245.			
18	a(H) Oleanane....	ns	"X"		2435.
Gammacerane.....		ns	nC31		32500.
C33	ab S Homohopane.	nd	C27bb		6100.
C33	ab R Homohopane.	nd	C28bb		3400.
C35	Hexacyclic.....	ns	C29bb		7000.

RESULTS :

27	bb S / 27	aa R ..	2.22	C29	DHop / C29 Hop	v. low.
27	aa S / 27	aa R --	0.96	C28	BNHop / C29 Hop-	0.15
27	S dia / 27	aa R ..	4.89	C29/5	/ C29 Hop.....	0.79
22	4-Me st / 27	aa R ..	0.24	18	aH Olean/C30 Hop.	v. low.
%	20 S C27		49.71	Gammacerane/C30	Hop.	v. low.
%	bb C27		69.37	30/3(R&S) / C29	Hop-	v. low.
29	bb S / 29	aa R...	2.49	30/3(R&S) / 23/3		v. low.
29	aa S / 29	aa R...	1.04	2	35Hex/C35Hop(R&S).	N / A
27	S dia / 29	aa R...	5.68	C35H(R&S)/C33H(R&S).		N / A
22	4-Me st / 29	aa R ..	0.28	29+30Hop/C35	H(R&S).	N / A
%	20 S C29		46.10			
%	bb C29		73.37			
21	st / 22	st	2.09			
22	4-Me st / 22	st --	0.20			
C29	H / C30	H	0.52	X/29H		0.37
Tm	/ Ts		0.52	nC31/C30H		2.56
23/3	/ 24/4		0.73	%nC31/100		0.10
%	22 S C31		57.14	%ST/100		0.27
%	22 S C32		60.00	%TT/100		0.61
ba	/ ab	---- X 100 -	11.93	%27bb/100		0.36
				%28bb/100		0.20
				%29bb/100		0.42
23/3	/ 21	st	1.18	27-30H/29ST		3.93
TT	/ ST		2.24	29bbR/29aaR		3.14

(3670-3680 m, cuttings)

ANNEXES 21 to 25

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1750

Sample..... : 25/2-12 B13647. ST NO
 Well Depth..... : 3670. to 3680. (Meters)
 Particularities II. : /
 Acquisition File Name : B13647STM Mag tape /
 Submitted by..... : KT July 26. , 1989.
 Particularities I... : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	8922.	C23	tricyclic.....	10028
C22	4-Methyl Sterane	1800.	C24	tetracyclic.....	11642
C22	Sterane.....	5799.	Ts.....		8460
C27	S Diasterane.....	17156.	Tm.....		3702
C27	aa S Sterane.....	8931.	29	ab Hopane.....	21157
C27	bb S Sterane.....	13475.	30	ab Hopane.....	79538
C27	bb S Sterane.....	13475.	30	ba Hopane.....	3172
C27	aa R Sterane.....	8148.	31	ab S Homohopane..	29620
C29	aa S Sterane.....	7740.	31	ab R Homohopane..	23801
C29	bb S Sterane.....	15700.	32	ab S Homohopane..	20090
C29	bb S Sterane.....	16150.	32	ab R Homohopane..	14800
C29	aa R Sterane.....	8782.	TOTAL TERPANES		556405
TOTAL STERANES		427497.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	ns	C35	ab S Homohopane..	nd
C30	tricyclic, 22 R..	ns	C35	ab R Homohopane..	nd
C29	Desmethyl Hopane.	ns			
C28	Bisnorhopane.....	ns			
C29/5	(RT. > 29 ab)...	12693.	"X"		3172
18	a(H) Oleanane.....	ns	nC31		17119
	Gammacerane.....	ns	C27bb		7700
C33	ab S Homohopane..	nd	C28bb		5500
C33	ab R Homohopane..	nd	C29bb		9900
C35	Hexacyclic.....	ns			

RESULTS :

27	bb S / 27 aa R ..	1.65	C29	DHop / C29 Hop .	v. low.
27	aa S / 27 aa R --	1.09	C28	BNHop / C29 Hop -	v. low.
27	S dia / 27 aa R .	2.10	C29/5	/ C29 Hop.....	0.59
22	4-Me st / 27 aa R	0.22	18	aH Olean/C30 Hop.	v. low.
%	20 S C27	50.88	Gammacerane/C30 Hop.	v. low.	
%	bb C27	61.20	30/3(R&S) / C29 Hop-	v. low.	
			30/3(R&S) / 23/3.....	v. low.	
29	bb S / 29 aa R...	1.83	2	35Hex/C35Hop(R&S).	N / A
29	aa S / 29 aa R...	0.88	C35H(R&S)/C33H(R&S).	N / A	
27	S dia / 29 aa R..	1.95	29+30Hop/C35 H(R&S).	N / A	
22	4-Me st / 29 aa R	0.20			
%	20 S C29	49.38	X/29H		0.14
%	bb C29	65.84	nC31/C30H		2.15
21	st / 22 st.....	1.53	%nC31/100		0.14
22	4-Me st / 22 st--	0.31	%ST/100		0.37
C29	H / C30 H	0.26	%TT/100		0.48
Tm	/ Ts	0.43	%27bb/100		0.33
23/3	/ 24/4	0.86	%28bb/100		0.23
%	22 S C31	55.44	%29bb/100		0.42
%	22 S C32	57.57	27-30H/29ST		2.33
ba	/ ab ---- X 100 -	3.98	29bbR/29aaR		1.78
23/3	/ 21 st	1.12			
TT	/ ST	1.30			

(3713.90-3714 m, core 3)

ANNEXES 26 to 31

S N E A (P) Organic Geochemistry
Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1741

Sample..... : 25/2-12 B13615. ST NO v
Well Depth..... : 3713.90 to 3714.00 (Meters)
Particularities II. : /
Acquisition File Name : B13615STM Mag tape /
Submitted by..... : KT July 21. , 1989.
Particularities I. : CA-K3

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	4594.	C23	tricyclic.....	3372.
C23	4-Methyl Sterane	799.	C24	tetracyclic.....	4271.
C25	Sterane.....	2345.	Ts.....		21909.
C27	S Diasterane.....	9488.	Tm.....		14240.
C27	aa S Sterane.....	4621.	29	ab Hopane.....	18842.
C27	bb R Sterane.....	6128.	30	ab Hopane.....	22347.
C27	bb S Sterane.....	6128.	30	ba Hopane.....	nd
C27	aa R Sterane.....	6830.	31	ab S Homohopane..	12926.
C29	aa S Sterane.....	3656.	31	ab R Homohopane..	10515.
C29	bb R Sterane.....	6615.	32	ab S Homohopane..	8545.
C29	bb S Sterane.....	6181.	32	ab R Homohopane..	6792.
C29	aa R Sterane.....	5310.	TOTAL	TERPANES.....	341562.
TOTAL	STERANES.....	203013.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	nd	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	nd	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	ns			
C28	Bisnorhopane....	ns			
C29/5	(RT. > 29 ab)...	14240.	"X"		15993.
18	a(H) Oleanane.....	ns	nC31		186195.
Gamma	cerane.....	ns	C27bb		5500.
C33	ab S Homohopane.	nd	C28bb		4200.
C33	ab R Homohopane.	nd	C29bb		6400.
C35	Hexacyclic.....	ns			

RESULTS :

27	bb S / 27 aa R ..	0.89	C29	DHop / C29 Hop .	v. low.
27	aa S / 27 aa R --	0.67	C28	BNHop / C29 Hop-	v. low.
27	S dia / 27 aa R	1.38	C29/5	/ C29 Hop.....	0.75
22	4-Me st / 27 aa R	0.11	18	aH Olean/C30 Hop.	v. low.
%	20 S C27	45.34	Gamma	cerane/C30 Hop.	v. low.
%	bb C27	51.69	30/3	(R&S) / C29 Hop-	N / A
			30/3	(R&S) / 23/3....	N / A
29	bb S / 29 aa R...	1.16	2.	35Hex/C35Hop (R&S).	N / A
29	aa S / 29 aa R...	0.68	C35H	(R&S)/C33H (R&S).	N / A
27	S dia / 29 aa R..	1.78	29+30	Hop/C35 H (R&S).	N / A
22	4-Me st / 29 aa R	0.15			
%	20 S C29	45.20	X/29H		0.84
%	bb C29	58.79	nC31/C30H		8.33
21	st / 22 st	1.95	%nC31/100		0.25
22	4-Me st / 22 st--	0.34	%ST/100		0.27
C29	H / C30 H	0.84	%TT/100		0.46
Tm	/ Ts	0.64	%27bb/100		0.34
23/3	/ 24/4	0.78	%28bb/100		0.26
%	22 S C31	55.14	%29bb/100		0.39
%	22 S C32	55.71	27-30H/29ST		3.55
ba	/ ab ---- X 100 -	N / A	29bbR/29aaR		1.24
23/3	/ 21 st	0.73			
TT	/ ST	1.68			

(3723 m, cuttings)

ANNEXES 32 to 36

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1751

Sample..... : 25/2-12 B13651. ST NO v
 Well Depth..... : 3723.00 to 3723.00 (Meters)
 Particularities II. : /
 Acquisition File Name : B13651STM Mag tape /
 Submitted by..... : KT July 26. , 1989.
 Particularities I... : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
C21	Sterane.....	11597.	C23	tricyclic.....	7709.
C22	4-Methyl Sterane	2214.	C24	tetracyclic.....	12182.
C22	Sterane.....	7271.	Ts.....		15279.
C27	S Diasterane.....	15869.	Tm.....		5392.
C27	aa S Sterane.....	5706.	29	ab Hopane.....	13482.
C27	bb R Sterane.....	7715.	30	ab Hopane.....	50312.
C27	bb S Sterane.....	7715.	30	ba Hopane.....	1797.
C27	aa R Sterane.....	5599.	31	ab S Homohopane..	17975.
C29	aa S Sterane.....	6641.	31	ab R Homohopane..	18424.
C29	bb R Sterane.....	11154.	32	ab S Homohopane..	12132.
C29	bb S Sterane.....	12618.	32	ab R Homohopane..	8089.
C29	aa R Sterane.....	8499.	TOTAL	TERPANES.....	452800.
TOTAL STERANES.....		379610.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	ns	C35	ab S Homohopane.	nd
C30	tricyclic, 22 R..	ns	C35	ab R Homohopane.	nd
29	Desmethyl Hopane.	ns			
C28	Bisnorhopane.....	ns			
C29/5	(RT. > 29 ab)...	12132.			
18	a(H) Oleanane.....	ns	"X"		8988.
Gammacerane.....		ns	nC31		135197.
C33	ab S Homohopane.	nd	C27bb		6200.
C33	ab R Homohopane.	nd	C28bb		4000.
C35	Hexacyclic.....	ns	C29bb		5500.

RESULTS :

27	bb S / 27	aa R ..	1.37	C29	DHop / C29	Hop	v. low.
27	aa S / 27	aa R --	1.01	C28	BNHop / C29	Hop-	v. low.
27	S dia / 27	aa R	2.83	C29/5	/ C29	Hop.....	0.89
22	4-Me st / 27	aa R	0.39	18	aH Olean/C30	Hop.	v. low.
%	20 S C27		50.20	Gammacerane/C30	Hop.		v. low.
%	bb C27		57.71	30/3(R&S) / C29	Hop-		v. low.
29	bb S / 29	aa R...	1.48	30/3(R&S) / 23/3			v. low.
29	aa S / 29	aa R...	0.78	2.35Hex/C35Hop	(R&S).		N / A
27	S dia / 29	aa R..	1.86	C35H(R&S)/C33H	(R&S).		N / A
22	4-Me st / 29	aa R	0.26	29+30Hop/C35	H(R&S).		N / A
%	20 S C29		49.49				
%	bb C29		61.09				
21	st / 22	st	1.59				
22	4-Me st / 22	st--	0.30				
C29	H / C30	H	0.26	X/29H			0.66
Tm / Ts			0.35	nC31/C30H			2.68
23/3 / 24/4			0.63	%nC31/100			0.13
%	22 S C31		49.38	%ST/100			0.39
%	22 S C32		59.99	%TT/100			0.46
ba / ab		X 100 -	3.57	%27bb/100			0.39
				%28bb/100			0.25
				%29bb/100			0.35
23/3 / 21	st		0.66	27-30H/29ST			2.17
TT / ST			1.19	29bbR/29aaR			1.31

(3733-3738 m, cuttings)

ANNEXES 37 to 41

S N E A (P) Organic Geochemistry
 Computerized GC/MS Analytical Report on Steranes and Terpanes nr. 1752

Sample..... : 25/2-12 B13653. ST NO v
 Well Depth..... : 3733. to 3738. (Meters)
 Particularities II. : /
 Acquisition File Name : B13653STM Mag tape /
 Submitted by..... : KT july 26. , 1989.
 Particularities I. : ND

S T E R A N E S		Areas	T E R P A N E S		Areas
COR1	Sterane.....	7441.	C23	tricyclic.....	5176.
COR2	4-Methyl Sterane	1000.	C24	tetracyclic.....	8141.
COR3	Sterane.....	3317.	Ts.....		14811.
COR4	S Diasterane.....	8617.	Tm.....		8888.
COR7	aa S Sterane.....	3740.	29 ab	Hopane.....	7200.
COR7	bb R Sterane.....	4631.	30 ab	Hopane.....	20069.
COR7	bb S Sterane.....	4631.	30 ba	Hopane.....	1777.
COR7	aa R Sterane.....	2760.	31 ab	S Homohopane..	5925.
COR9	aa S Sterane.....	2846.	31 ab	R Homohopane..	11552.
COR9	bb R Sterane.....	5700.	32 ab	S Homohopane..	3555.
COR9	bb S Sterane.....	6050.	32 ab	R Homohopane..	2370.
COR9	aa R Sterane.....	3348.	TOTAL	TERPANES.....	238217.
TOTAL STERANES		174278.			

OPTIONAL ANALYSIS		Areas	OPTIONAL ANALYSIS		Areas
C30	tricyclic, 22 S..	1800.	C35 ab S	Homohopane.	nd
C30	tricyclic, 22 R..	1800.	C35 ab R	Homohopane.	nd
C29	Desmethyl Hopane.	ns			
C28	Bisnorhopane....	ns			
C29/5	(RT. > 29 ab)..	7466.			
18	a(H) Dleanane....	ns	"X"		6984.
Gamma	macetane.....	ns	nC31		102996.
C33	ab S Homohopane.	nd	C27bb		3000.
C33	ab R Homohopane.	nd	C28bb		2500.
C35	Hexacyclic.....	ns	C29bb		4800.

RESULTS :

27 bb S / 27 aa R ..	1. 67	C29 DHop / C29 Hop .	v. low.
27 aa S / 27 aa R --	1. 35	C28 BNHop / C29 Hop-	v. low.
27 S dia / 27 aa R ..	3. 12	C29/5 / C29 Hop.....	1. 03
22 4-Me st / 27 aa R	0. 36	18 aH Dlean/C30 Hop.	v. low.
% 20 S C27	53. 10	Gammaetane/C30 Hop.	v. low.
% bb C27	58. 76	30/3(R&S) / C29 Hop-	0. 50
		30/3(R&S) / 23/3.....	0. 69
29 bb S / 29 aa R...	1. 80	2. 35Hex/C35Hop(R&S).	N / A
29 aa S / 29 aa R...	0. 85	C35H(R&S)/C33H(R&S).	N / A
27 S dia / 29 aa R..	2. 57	29+30Hop/C35 H(R&S).	N / A
22 4-Me st / 29 aa R	0. 29		
% 20 S C29	49. 57	X/29H	0. 96
% bb C29	65. 48	nC31/C30H	5. 13
21 st / 22 st	2. 24	%nC31/100	0. 19
22 4-Me st / 22 st--	0. 30	%ST/100	0. 33
		%TT/100	0. 46
C29 H / C30 H	0. 35	%27bb/100	0. 29
Tm / Ts	0. 60	%28bb/100	0. 24
23/3 / 24/4	0. 63	%29bb/100	0. 46
% 22 S C31	33. 90	27-30H/29ST	2. 84
% 22 S C32	59. 99	29bbR/29aaR	1. 70
ba / ab ----- X 100 -	8. 85		
23/3 / 21 st	0. 69		
TT / ST	1. 36		

(3850-3855 m. cuttings)

ANNEXES 42 to 46