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APPENDIX 1: Geochemical data report – Vitrinite reflectance of samples from well 25/11-24, by Applied Petroleum Technology AS, Kjeller

APPENDIX 2: Group type distribution, Iatroscan data

APPENDIX 3: Headspace and occluded gas in canned DC samples

APPENDIX 4: Sample Summary reports

APPENDIX 5: Fluid inclusion study

2 Experimental

The analytical and preparative methods employed in this study, comprise geochemical characterization of sediment extracts and fluids. All chromatographic data are based on quantitative measurements.

The analytical methods are based on the guidelines in the Norwegian Industry Guide to Organic Geochemical Analyses (NIGOGA[1]). Major deviations from this guide are:

- Extract and asphaltene workup by centrifugation.
- Internal standard mixture added for quality control and quantitative measurements. GC analysis of SAT and ARO fractions by 5% phenyl methyl-silicone stationary phase.
- GC-MSD detection of the aromatic hydrocarbons (not FID).
- Report of a restricted number of compounds relative to the NIGOGA guide, due to known co-elusions or disputable identities.

The data quality control is according to NIGOGA and defined internal laboratory procedures, available on request. Samples that are annotated "NSO1", represent the internal North Sea reference oil (NGS-NSO1) and "SR" represents the Norwegian reference source rock (NGS-SR). These reference samples reflect the analytical repeatability. All depths are quoted as measured depths in m MD RKB.

[1] The Norwegian Industry Guide to Organic Geochemical Analyses, edition 4.0, 2000

Appendix 1
Vitrinite reflectance data

Geochemistry Data Report - Vitrinite Reflectance of 15 Samples from Well 25/11-24

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Report Title Geochemistry Data Report - Vitrinite Reflectance of 15 Samples from Well 25/11-24	**Submitted** 2007-08-13
Client Norsk Hydro	**Service Order** 404367
Client Reference Arne Sigurd Steen	**Number of pages** 20
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Authors
Kjell Urdal

	Name	Date	Signature
Reviewed by	Geir Hansen	2007-07-23	
Approved by	Tore Haaland	2007-07-23	

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Table 1. Number of analyses performed

Analysis	Cuttings
Vitrinite reflectance	15

Table 2. Vitrinite Reflectance Data

Well	Sample type	Sample name	Upper Depth (m)	Lower Depth (m)	APT ID	Sample prep.	Lithology	%Ro	Std. dev.	No. of measurements	Quality rating	Overall quality	Comment
25/11-24	DC		1107	1110	41353	HF	sh	0.28	0.03	19	oo-ooo	M	See data sheet
25/11-24	DC		1190	1200	41354	HF	sh	0.30	0.05	20	oo-oo+	G	See data sheet
25/11-24	DC		1290	1300	41355	HF	sh	0.29	0.07	16	oo-oo+	M	See data sheet
25/11-24	DC		1397	1400	41356	HF	sh	0.27	0.05	17	oo-oo+	M	See data sheet
25/11-24	DC		1495	1505	41357	HF	slst	0.25	0.03	7	oo-oo+	M	See data sheet
25/11-24	DC		1567	1570	41358	HF	slst	0.41	0.05	7	ooooo+	M	See data sheet
25/11-24	DC		1620	1630	41359	HF	slst	0.37	0.01	8	o-oooo	M	See data sheet
25/11-24	DC		1698	1701	41360	HF	slst	0.43	0.06	13	ooooo+	M	See data sheet
25/11-24	DC		1749	1752	41361	HF	sh	0.30	0.05	12	oo---o	M	See data sheet
25/11-24	DC		1797	1800	41362	HF	sh	0.31	0.03	11	ooo--o	M	See data sheet
25/11-24	DC		1869	1872	41363	HF	slst	0.38	0.04	21	-o---o	P	See data sheet
25/11-24	DC		1941	1944	41364	HF	sh	0.36	0.04	14	ooo-oo	M	See data sheet
25/11-24	DC		1998	2001	41365	HF	slst	0.45	0.04	14	oo--oo	M	See data sheet
25/11-24	DC		2049	2052	41366	HF	slst	0.33	0.05	13	oooooo	M	See data sheet
25/11-24	DC		2100	2103	41367	HF	coal	0.37	0.04	19	oo-o-o	M	See data sheet

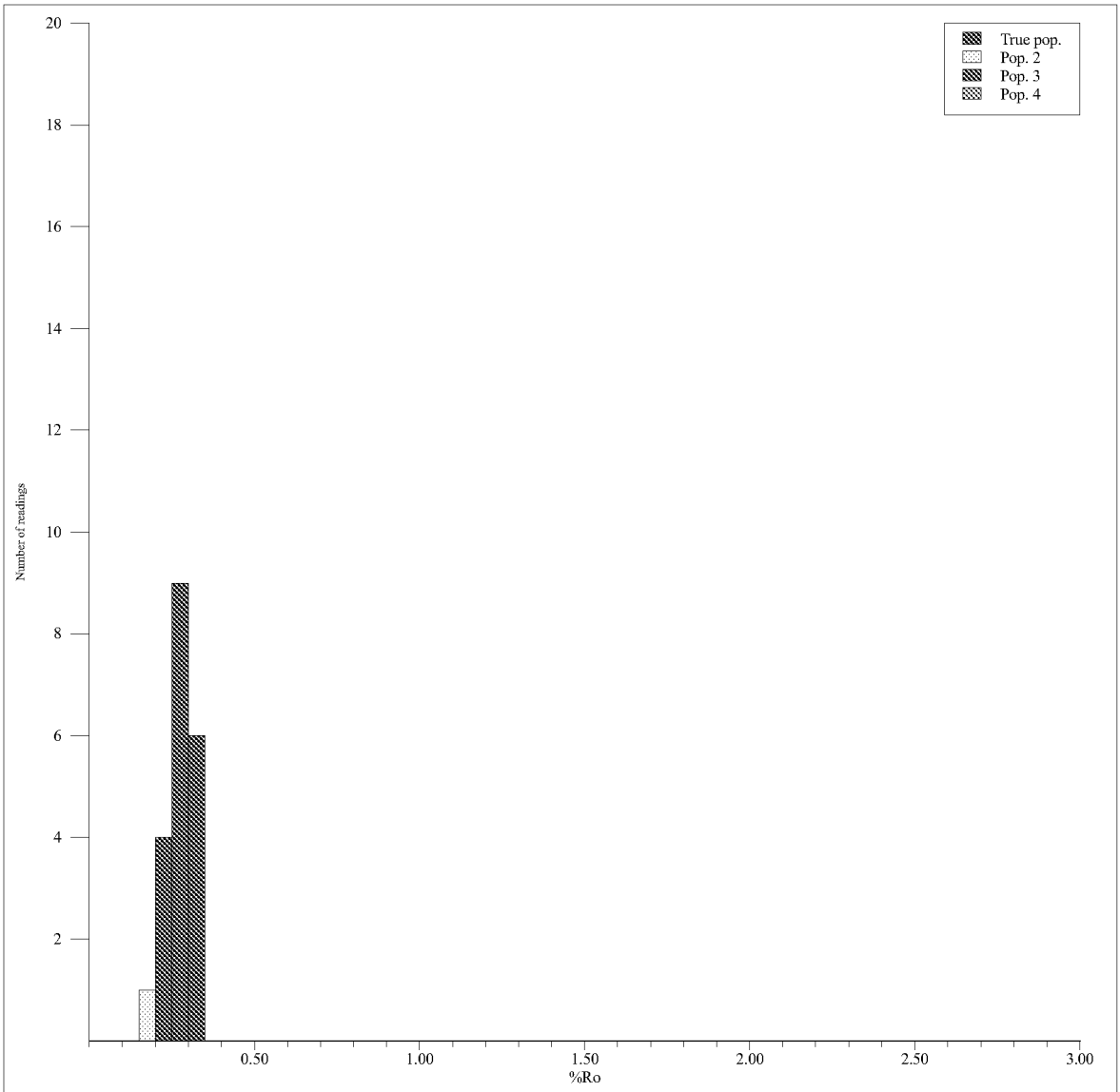
Legend to Vitrinite reflectance data

Lithology code		**Sample quality**		**Sample preparation**	
sst	Sandstone	G	Good	HF	Sample treatment with hydrofluoric acid prior to analysis
slst	Siltstone	M	Moderate		
clyst	Claystone	P	Poor	Bulk	Sample treated as bulk rock
sh	Shale	st	Hydrocarbon staining		
lst	Limestone				
coal	Coal				

Sample description and measurement evaluation (perfect sample characterised as: oooooo)

Sign order	**Parameter**	**Sign**	**Sign legend:**
1	Abundance of vitrinite	-o	- May give too low vitrinite reflectance sample value
2	Identification of vitrinite	-o+	o Reliable vitrinite reflectance sample value
3	Type of vitrinite	-o+	+ May give too high vitrinite reflectance sample value
4	Vitrinite fragment size	-o	
5	Vitrinite surface quality	-o	
6	Abundance of pyrite	o+	

Vitrinite Reflectance Sample Data Sheets



Sample info:

Well	25/11-24
Lower depth	1110
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41353

Quality rating:

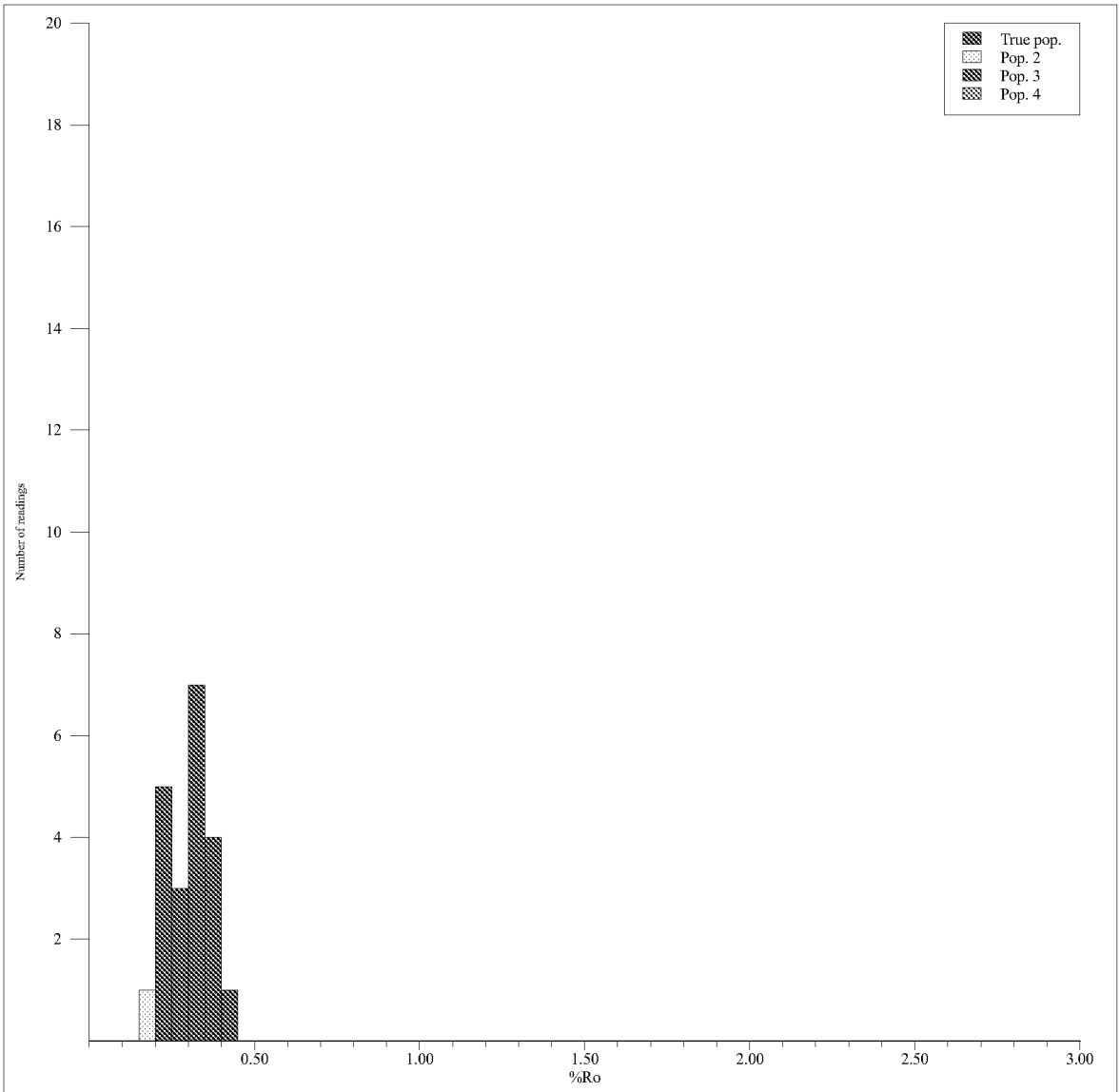
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	o
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.28±0.03	0.20±0.00		
Individual	0.212	0.196		
measurements	0.223			
3	0.237			
4	0.238			
5	0.251			
6	0.253			
7	0.261			
8	0.263			
9	0.273			
10	0.292			
11	0.292			
12	0.297			
13	0.297			
14	0.304			
15	0.308			
16	0.309			
17	0.309			
18	0.313			
19	0.321			
20				
21				
22				
23				
24				
25				
26				

Comments:
Shale has low to moderate organic matter content that is dominated by immature vitrinite, recycled vitrinite and inertinite. Strong matrix bitumen staining. Yellow-orange to light orange spore fluorescence color.



Sample info:

Well	25/11-24
Lower depth	1200
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41354

Quality rating:

Average sample quality	G
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.30±0.05	0.17±0.00		
Individual	0.232	0.172		
measurements	0.237			
3	0.244			
4	0.247			
5	0.247			
6	0.251			
7	0.254			
8	0.271			
9	0.309			
10	0.314			
11	0.316			
12	0.319			
13	0.321			
14	0.323			
15	0.331			
16	0.364			
17	0.364			
18	0.371			
19	0.371			
20	0.407			
21				
22				
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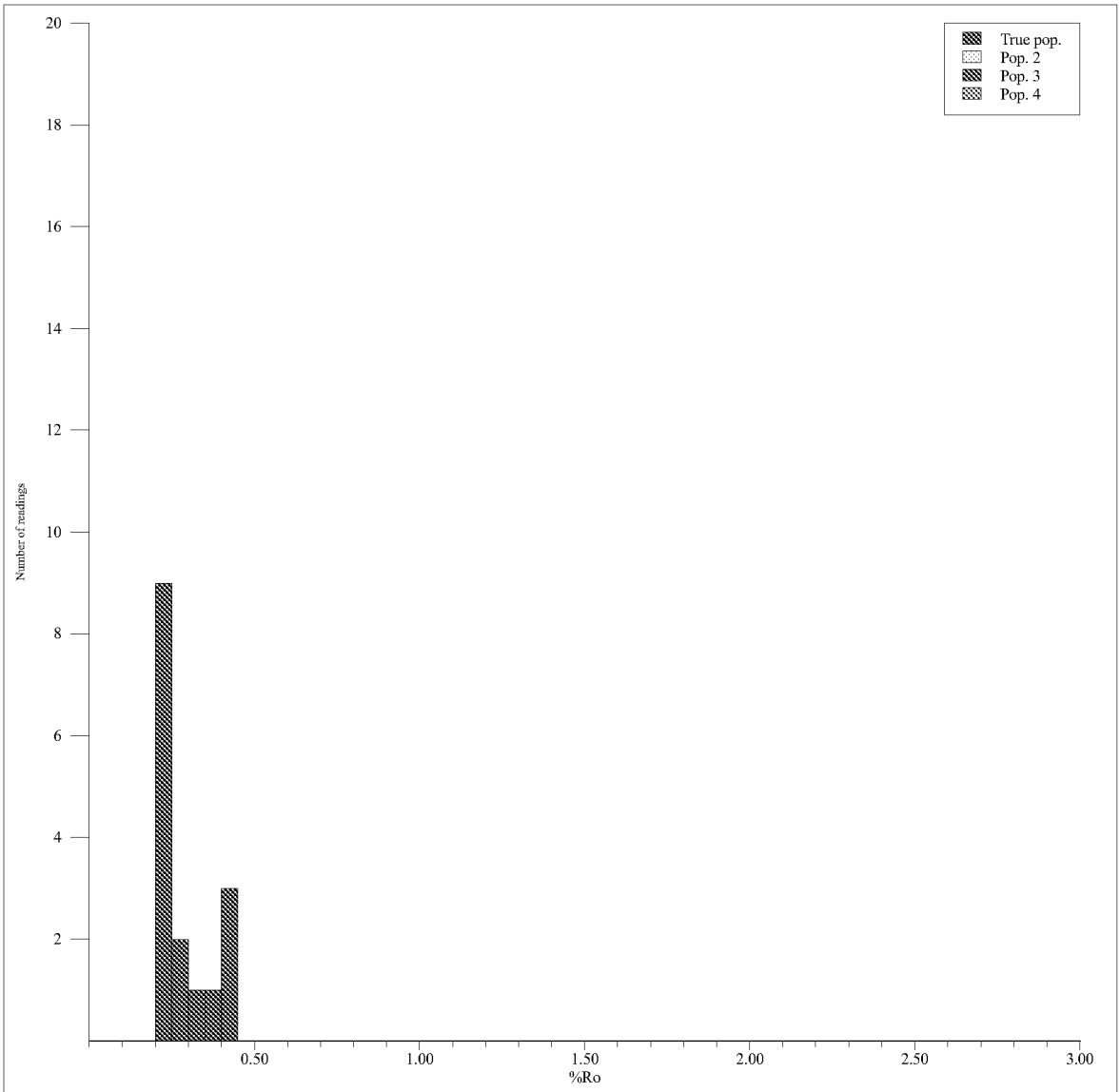
25				
26				

Comments:
Shale is dominated by low maturity vitrinite, reworked vitrinite and inertinite. Yellow-orange to light orange spore fluorescence color. Algae fluoresce yellow.



Sample info:

Well	25/11-24
Lower depth	1300
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41355

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.29±0.07			
Individual	0.212			
measurements	0.217			
3	0.231			
4	0.236			
5	0.239			
6	0.241			
7	0.243			
8	0.246			
9	0.246			
10	0.258			
11	0.258			
12	0.341			
13	0.368			
14	0.403			
15	0.406			
16	0.425			
17				
18				
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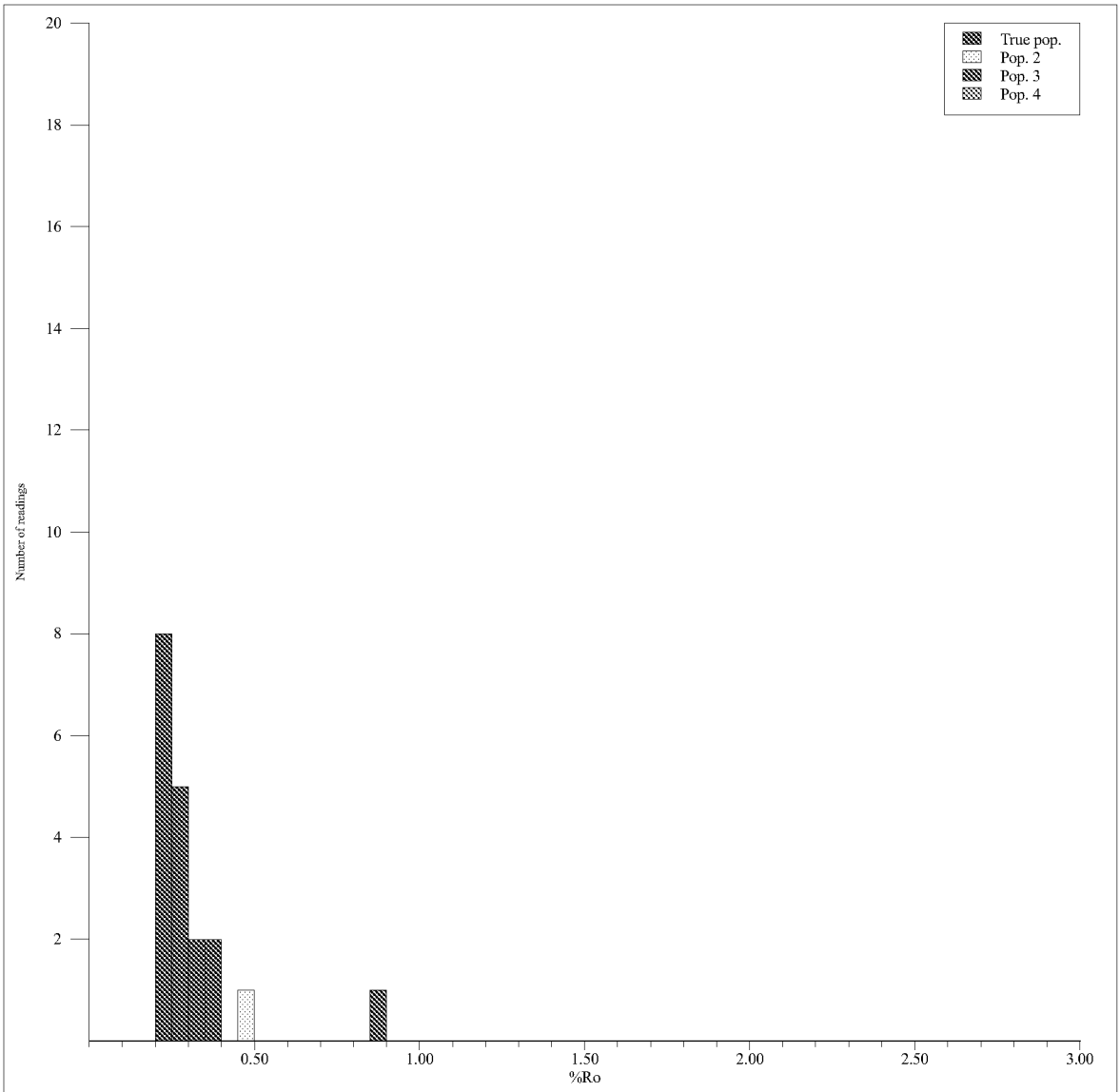
Comments:
Silty shale is rich in laminated vitrinite, inertinite and reworked vitrinite. Significant bitumen streaks. Yellow algal fluorescence and yellow -orange spore fluorescence color.



Sample info:

Well	25/11-24
Lower depth	1400
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41356

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.27±0.05	0.47±0.00	0.90±0.00	
Individual	0.205	0.466	0.898	
measurements	0.215			
3	0.232			
4	0.239			
5	0.241			
6	0.244			
7	0.246			
8	0.248			
9	0.253			
10	0.258			
11	0.263			
12	0.265			
13	0.289			
14	0.325			
15	0.342			
16	0.356			
17	0.359			
18				
19				
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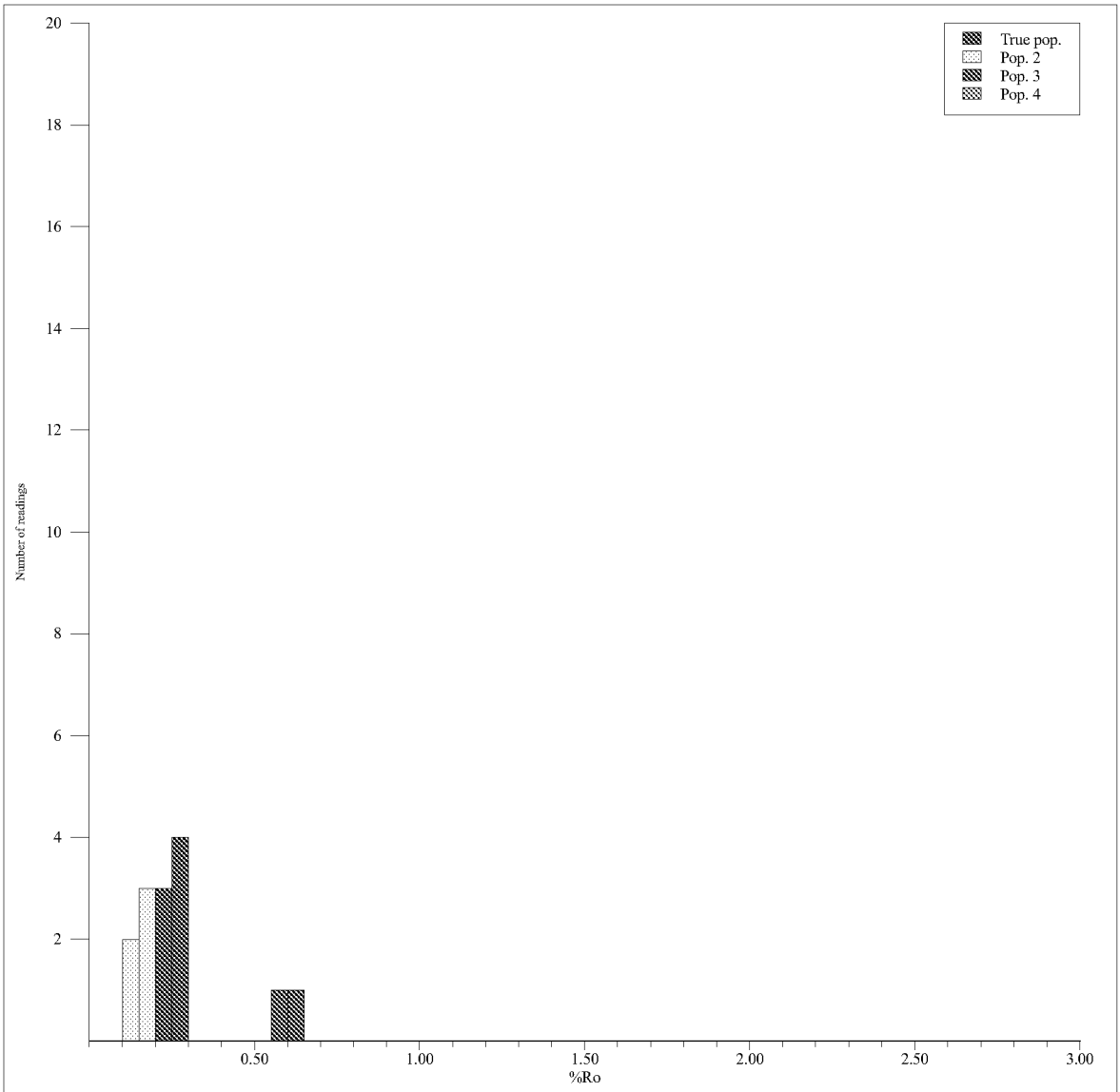
Comments:
Shale has a rich organic matter content that is dominated recycled vitrinite indigenous vitrinite, and inertinite and occasional coaly particles. Yellow-orange spore fluorescence color.



Sample info:

Well	25/11-24
Lower depth	1505
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41357

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.25±0.03	0.16±0.02	0.58±0.04	
Individual	0.202	0.140	0.559	
measurements	0.236	0.147	0.611	
3	0.241	0.152		
4	0.267	0.169		
5	0.272	0.195		
6	0.279			
7	0.281			
8				
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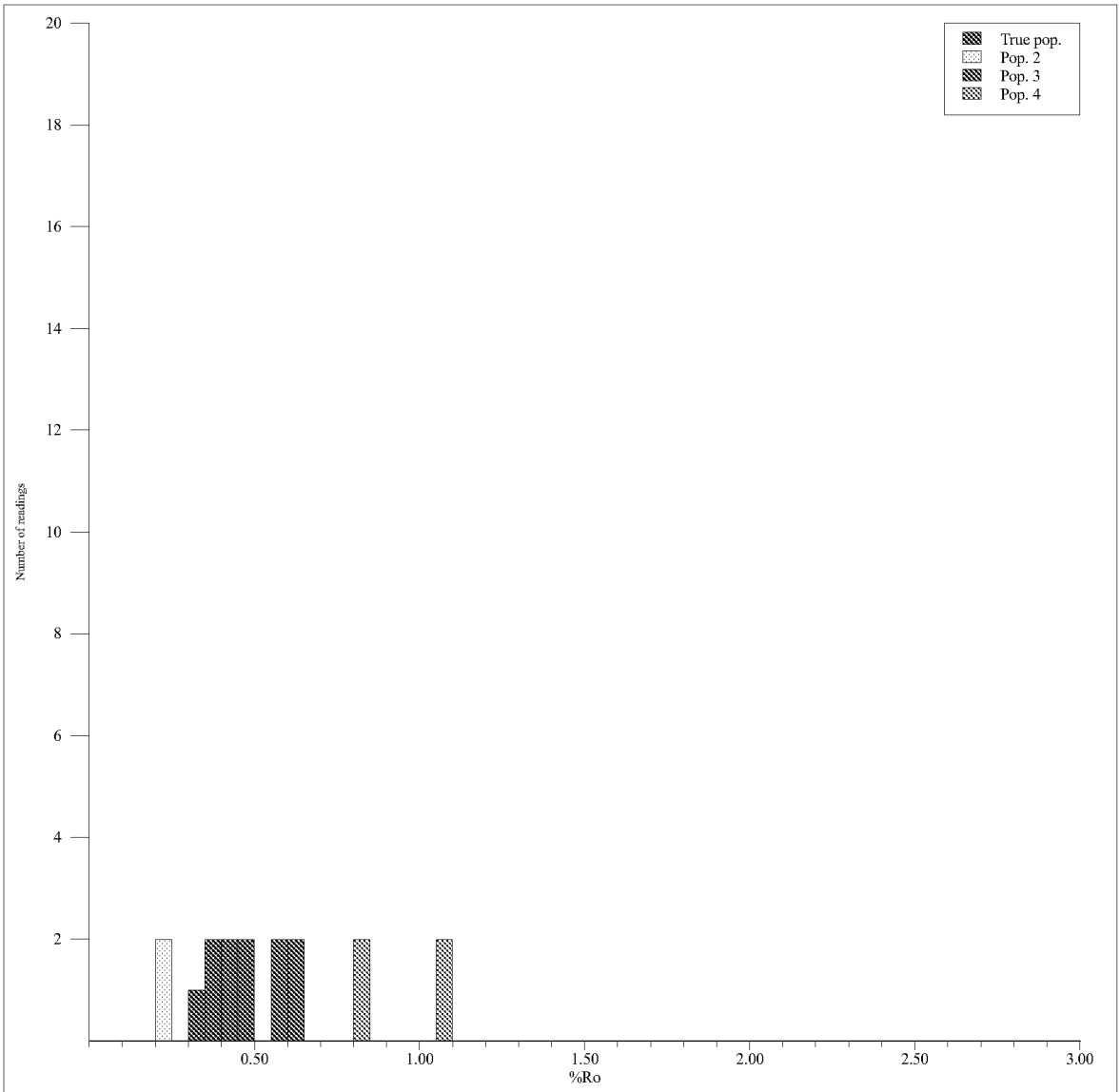
Comments:
Siltstone is dominated by blocky reworked vitrinite, inertinite and minor indigenous vitrinite. Bitumen staining is strong. Yellow/yellow-orange spore fluorescence color.



Sample info:

Well	25/11-24
Lower depth	1570
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41358

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.41±0.05	0.23±0.01	0.59±0.03	0.95±0.14
Individual	0.340	0.223	0.565	0.813
measurements	0.387	0.231	0.573	0.835
3	0.397		0.615	1.058
4	0.412		0.625	1.088
5	0.426			
6	0.466			
7	0.476			
8				
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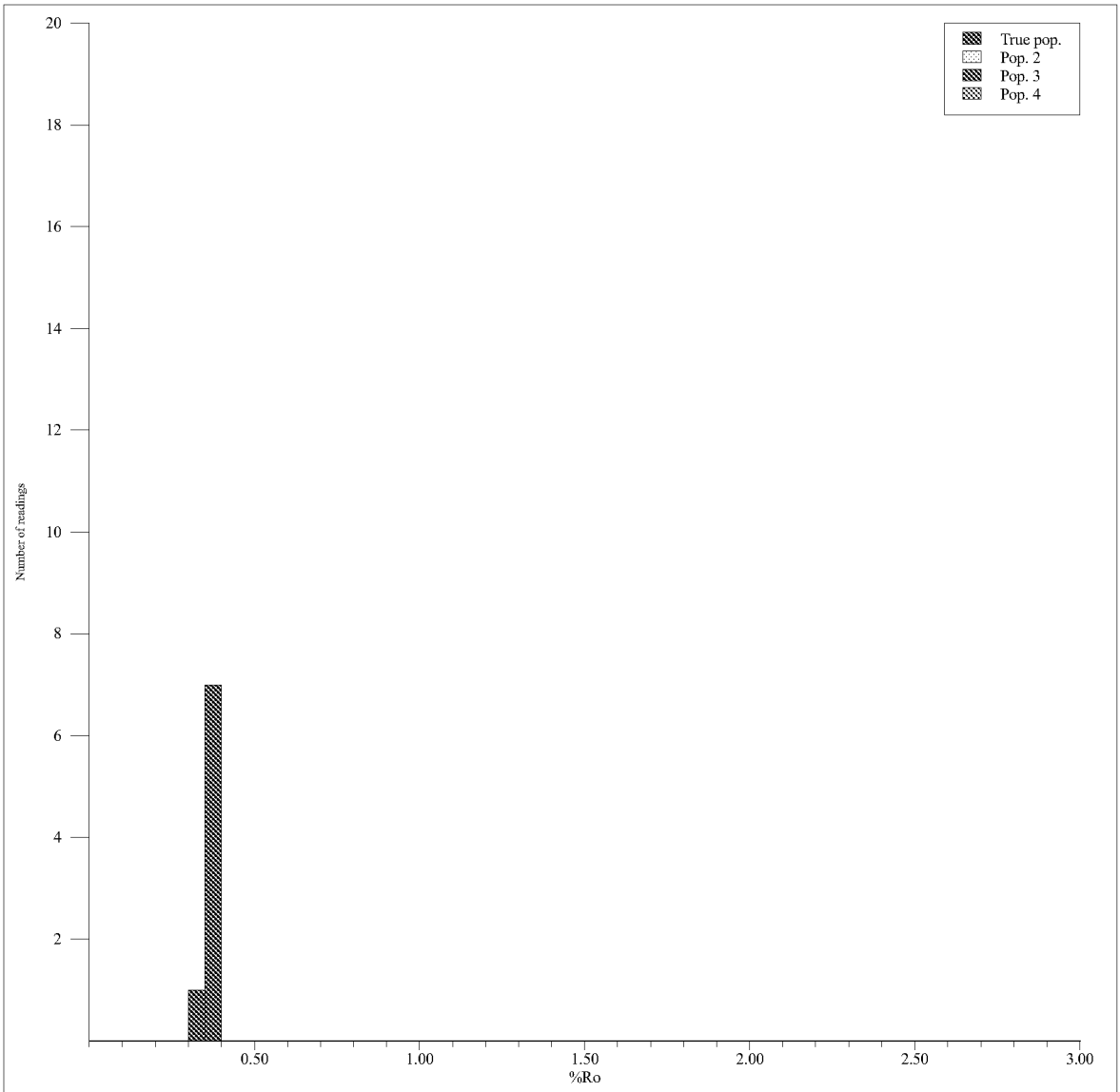
Comments:
Siltstone has a low to moderate organic matter content that is dominated by vitrinite, inertinite and recycled vitrinite. Liptinite is dominated by algae with trace spores that fluoresce light orange to mid orange with a low to moderate intensity.



Sample info:

Well	25/11-24
Lower depth	1630
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41359

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	-
Type of vitrinite	o
Particle size	o
Particle surface quality	o
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.37±0.01			
Individual measurements	0.348			
3	0.358			
4	0.360			
5	0.365			
6	0.370			
7	0.372			
8	0.377			
9	0.384			
10				
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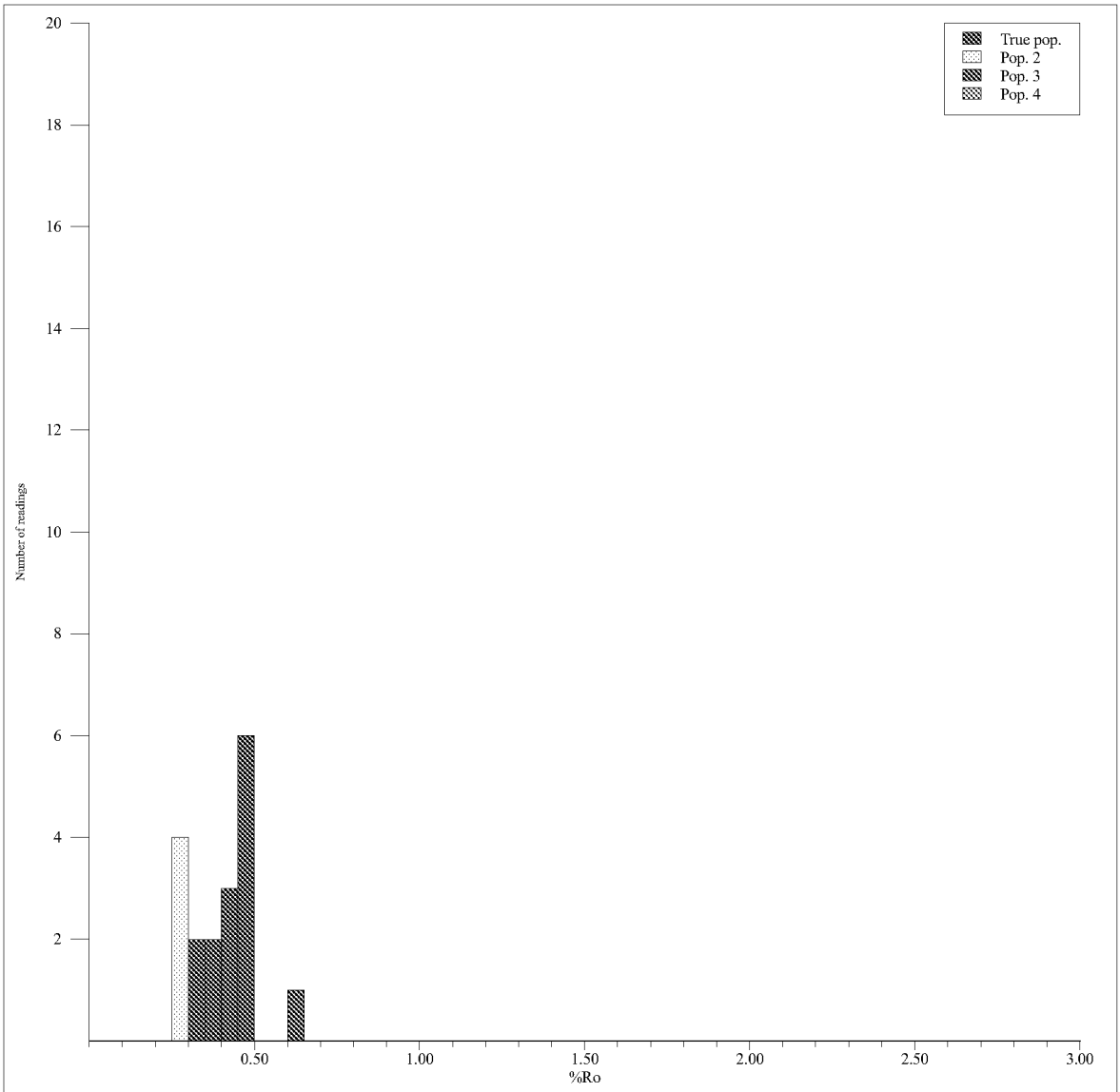
Comments:
Siltstone has a low organic matter content that is dominated by small particles of vitrinite, inertinite and recycled vitrinite. Moderate bitumen staining. Spores fluoresce yellow/yellow-orange with occasional dark red matrix fluorescence.



Sample info:

Well	25/11-24
Lower depth	1701
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41360

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	o
Particle surface quality	o
Abundance of pyrite	+

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.43±0.06	0.27±0.02	0.62±0.00	
Individual	0.311	0.253	0.618	
measurements	0.320	0.260		
3	0.394	0.277		
4	0.399	0.299		
5	0.439			
6	0.444			
7	0.446			
8	0.458			
9	0.465			
10	0.468			
11	0.473			
12	0.475			
13	0.484			
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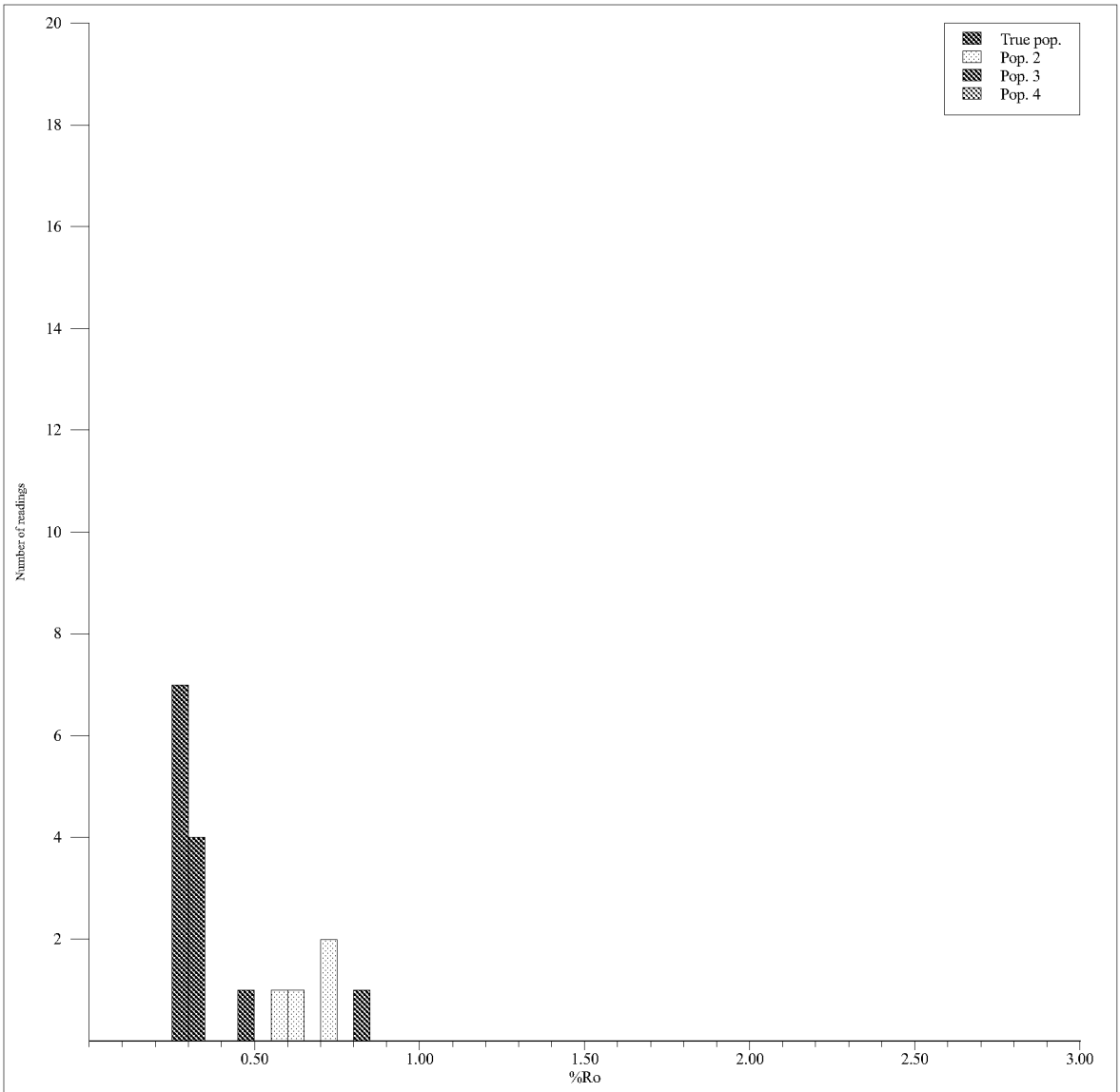
Comments:
Siltstone has a moderate organic matter content that is dominated by vitrinite, inertinite, recycled vitrinite with occasional coaly (blocky particles). Lower liptinite content compared to shallower samples. Low intensity spores fluoresce yellow-orange.



Sample info:

Well	25/11-24
Lower depth	1752
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41361

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	-
Particle surface quality	-
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.30±0.05	0.65±0.06	0.82±0.00	
Individual	0.270	0.600	0.823	
measurements	0.276	0.605		
3	0.278	0.700		
4	0.281	0.708		
5	0.283			
6	0.286			
7	0.295			
8	0.300			
9	0.303			
10	0.305			
11	0.310			
12	0.472			
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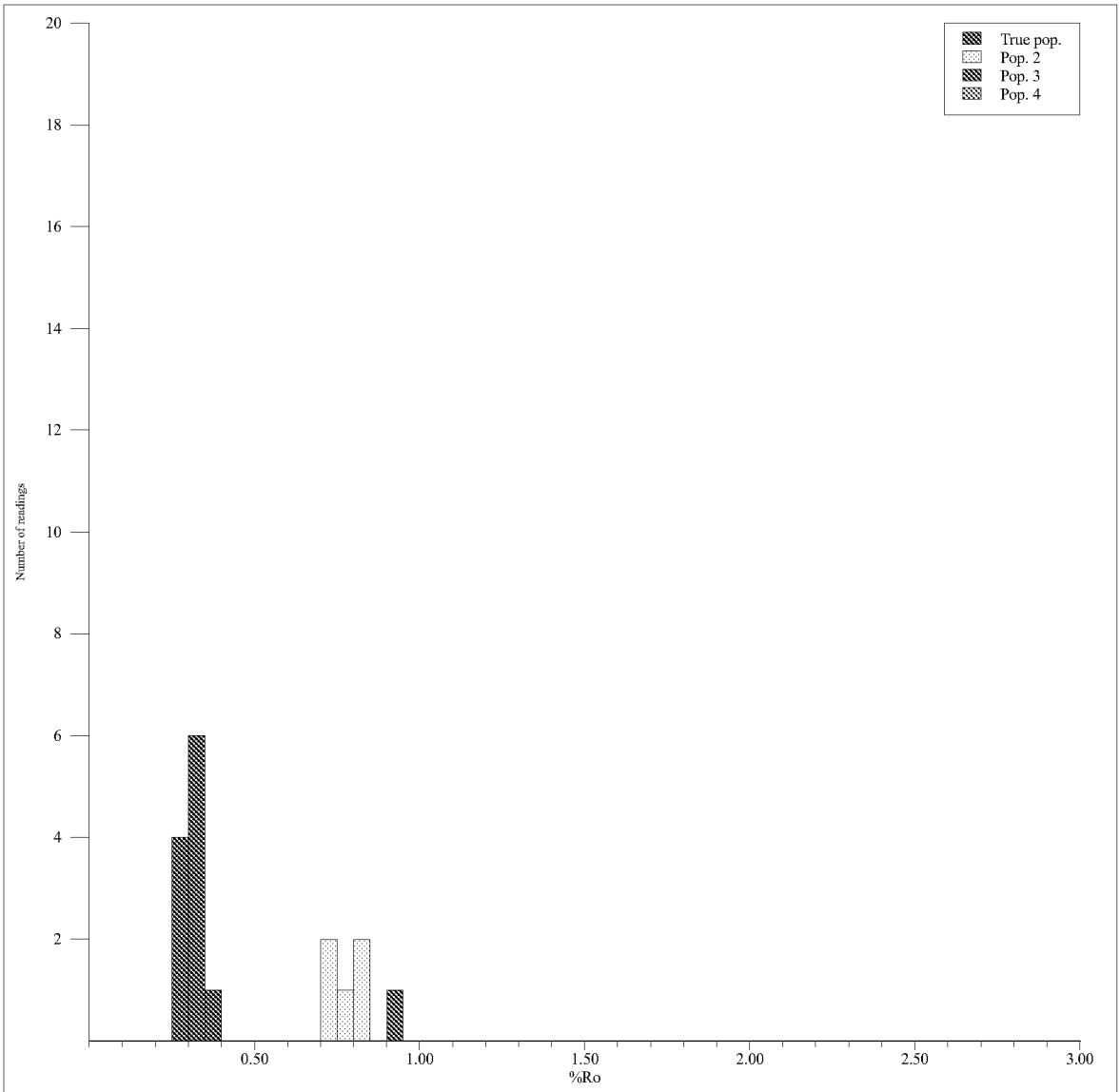
Comments:
Silty shale has a moderate organic matter content that is dominated by inertinite, recycled vitrinite and minor indigenous vitrinite. Moderately strong matrix bitumen staining. Yellow-orange spore fluorescence color.



Sample info:

Well	25/11-24
Lower depth	1800
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41362

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	-
Particle surface quality	-
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.31±0.03	0.77±0.06	0.91±0.00	
Individual	0.258	0.704	0.913	
measurements	0.263	0.715		
3	0.291	0.771		
4	0.296	0.832		
5	0.306	0.842		
6	0.311			
7	0.317			
8	0.322			
9	0.324			
10	0.332			
11	0.360			
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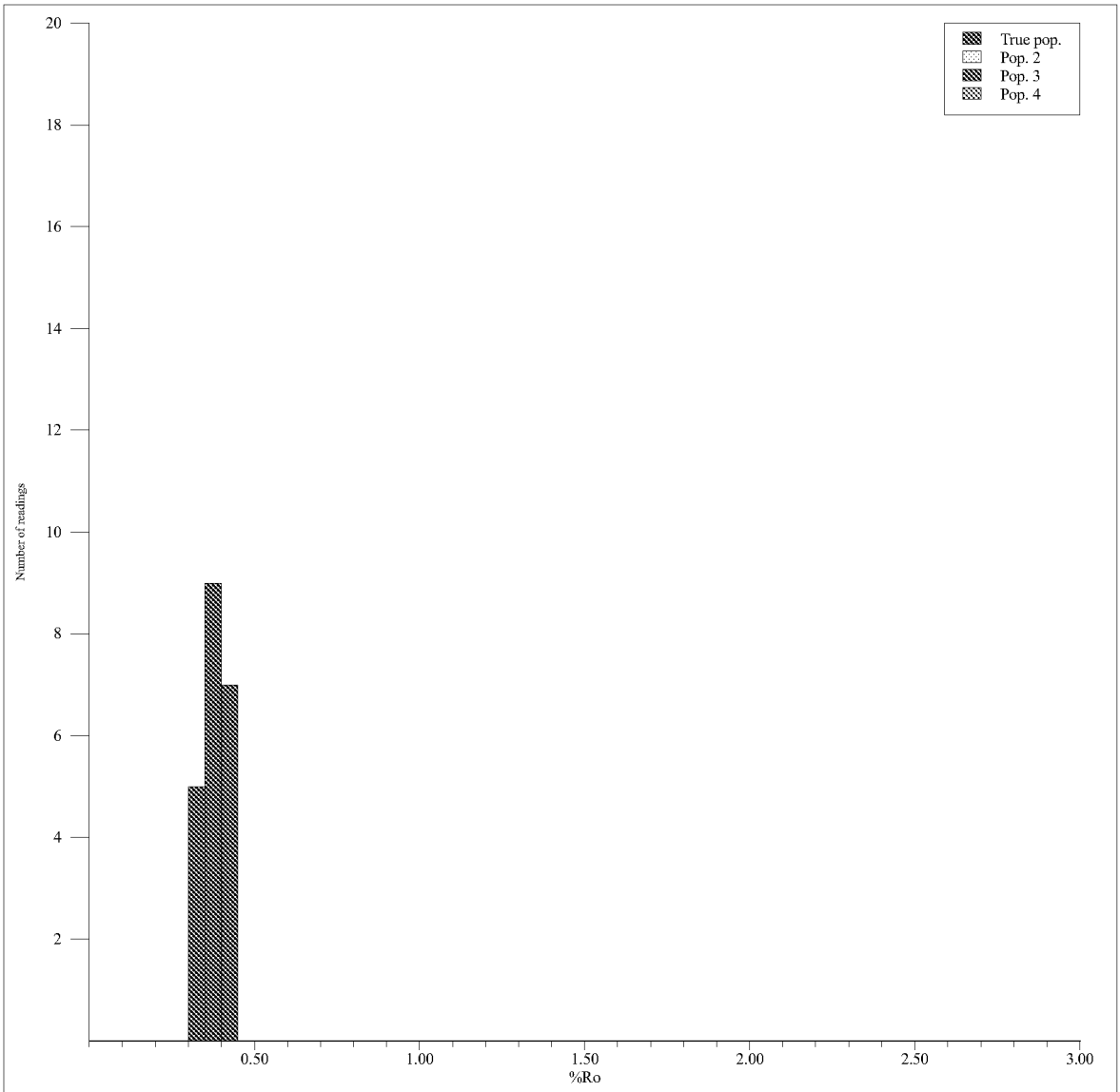
Comments:
Shale is dominated by reworked vitrinite, inertinite and minor indigenous vitrinite. Abundant liptinite streaks with light pervasive bitumen staining. Spores fluoresce yellow-orange with significant light orange to mid orange mineral fluorescence.



Sample info:

Well	25/11-24
Lower depth	1872
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41363

Quality rating:

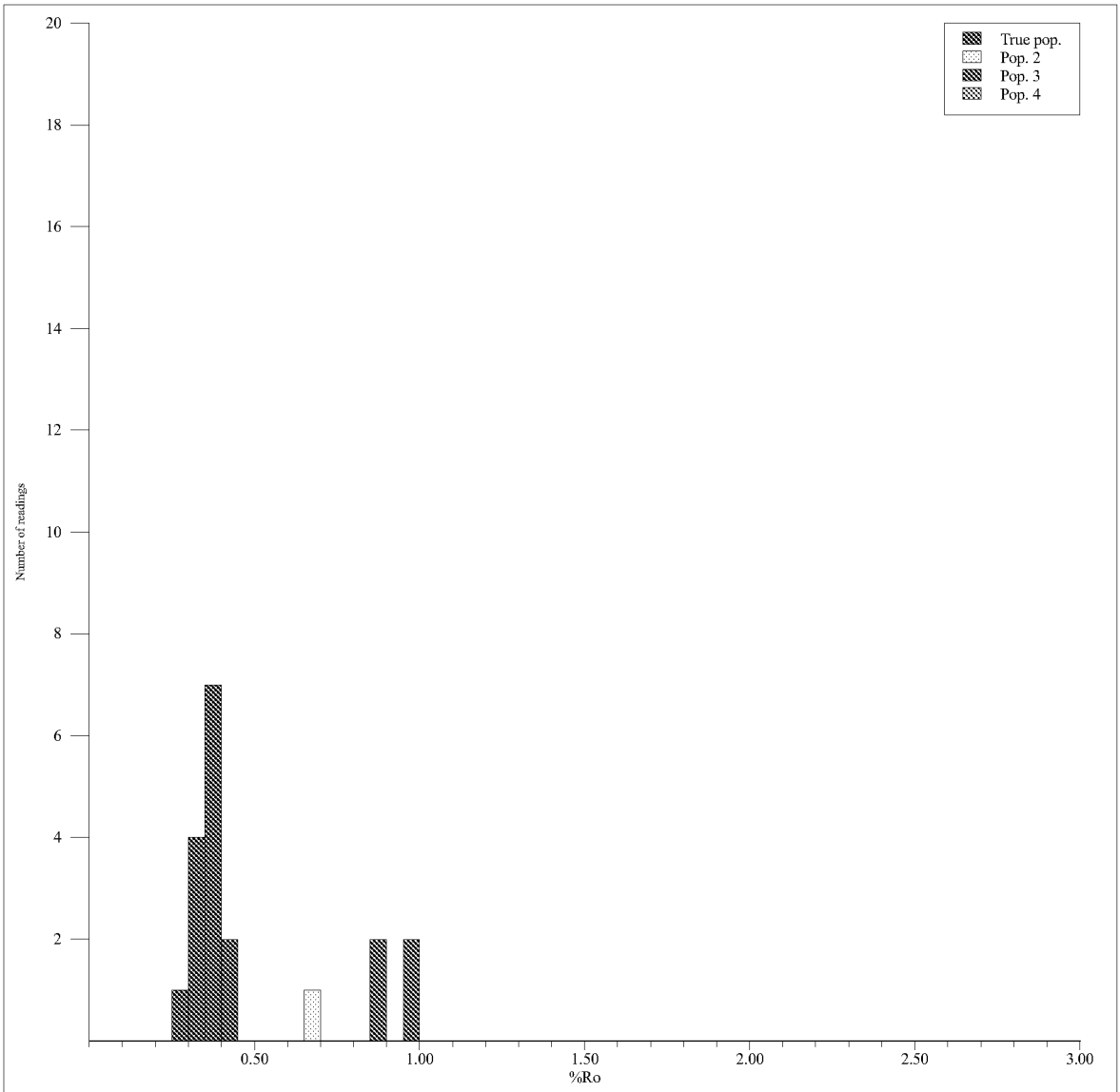
Average sample quality	P
Abundance of vitrinite	-
Identification of vitrinite	o
Type of vitrinite	-
Particle size	-
Particle surface quality	-
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.38±0.04			
Individual measurements	0.322			
3	0.327			
4	0.330			
5	0.335			
6	0.346			
7	0.351			
8	0.372			
9	0.375			
10	0.380			
11	0.382			
12	0.395			
13	0.397			
14	0.399			
15	0.400			
16	0.403			
17	0.408			
18	0.418			
19	0.419			
20	0.424			
21	0.425			
22	0.442			
23				
24				
25				
26				

Comments:
Siltstone has a low organic matter content except for occasionally bitumen staining and pyrite. Trace fluorescing liptinite.



Sample info:

Well	25/11-24
Lower depth	1944
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	12.07.2007
APT ID	41364

Quality rating:

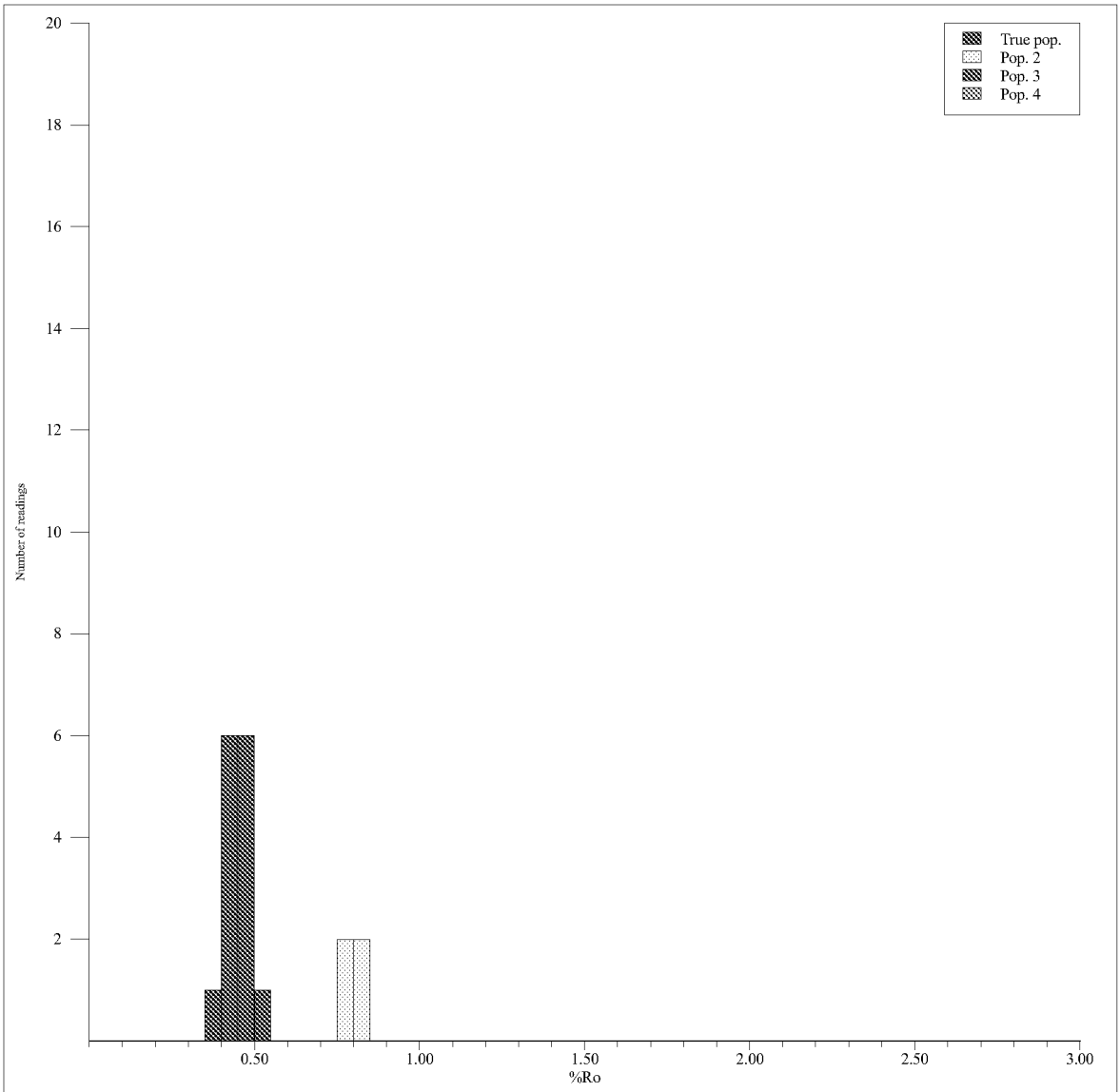
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	-
Particle surface quality	o
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.36±0.04	0.68±0.00	0.92±0.06	
Individual	0.290	0.683	0.865	
measurements	0.313		0.883	
3	0.318		0.970	
4	0.329		0.975	
5	0.341			
6	0.352			
7	0.357			
8	0.362			
9	0.380			
10	0.380			
11	0.385			
12	0.393			
13	0.403			
14	0.416			
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

Comments:
Shale with moderate organic matter content is dominated by fine particles of inertinite, reworked vitrinite and minor indigenous vitrinite with significant liptinite streaks. Trace small weak intensity light orange to mid orange spore fluorescence.



Sample info:

Well	25/11-24
Lower depth	2001
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41365

Quality rating:

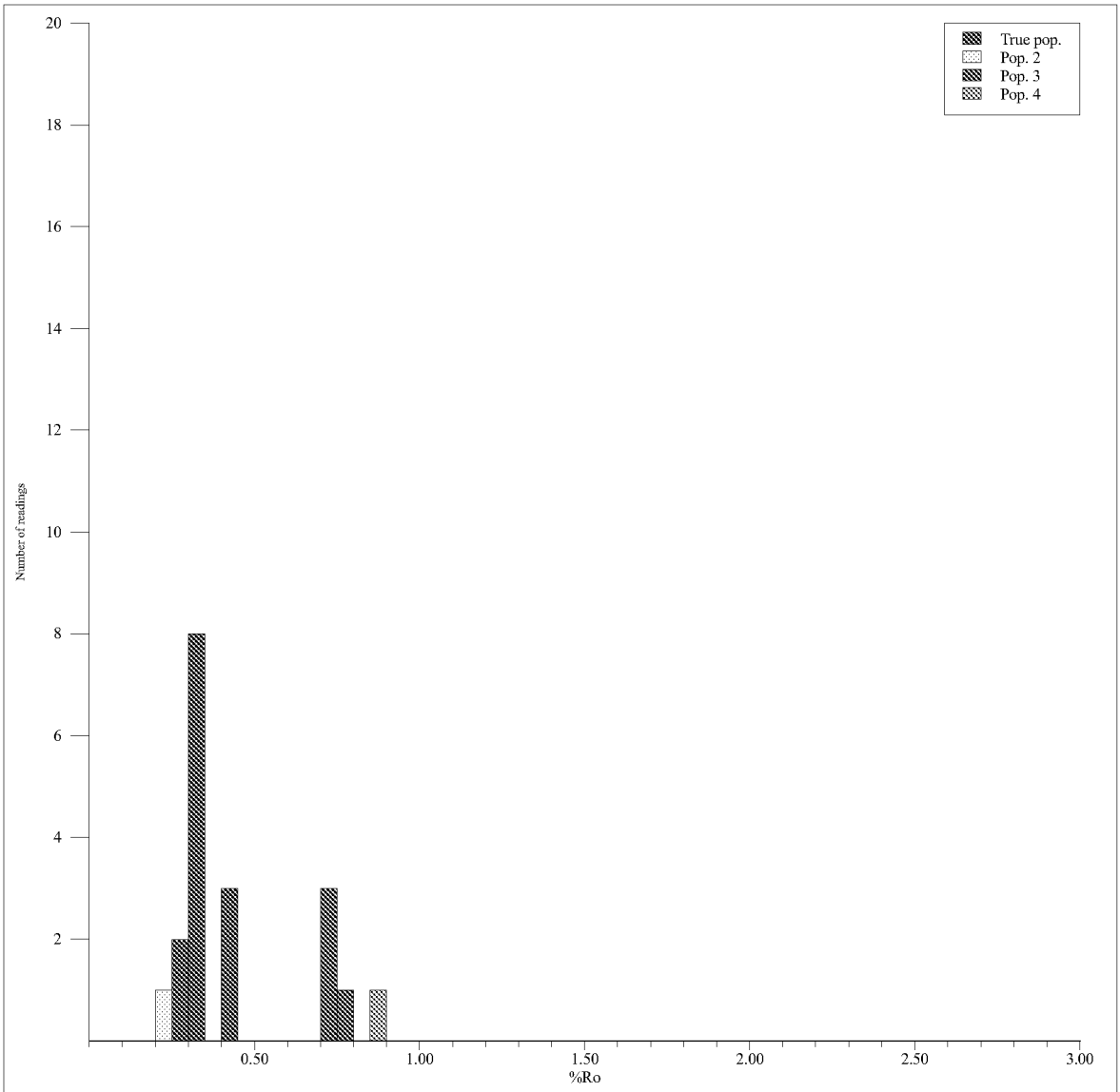
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	-
Particle surface quality	o
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.45±0.04	0.80±0.01		
Individual	0.394	0.792		
measurements	0.404	0.797		
3	0.409	0.805		
4	0.412	0.820		
5	0.422			
6	0.427			
7	0.445			
8	0.463			
9	0.463			
10	0.473			
11	0.481			
12	0.491			
13	0.494			
14	0.512			
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

Comments:
Siltstone with a moderate organic matter content is dominated by inertinite, rwkd vitrinite and indigenous vitrinite. Moderate bitumen staining and liptinite streaks. Weak mid-orange spores (reworked?); yellow-orange to light orange spore fluorescence..



Sample info:

Well	25/11-24
Lower depth	2052
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	12.07.2007
APT ID	41366

Quality rating:

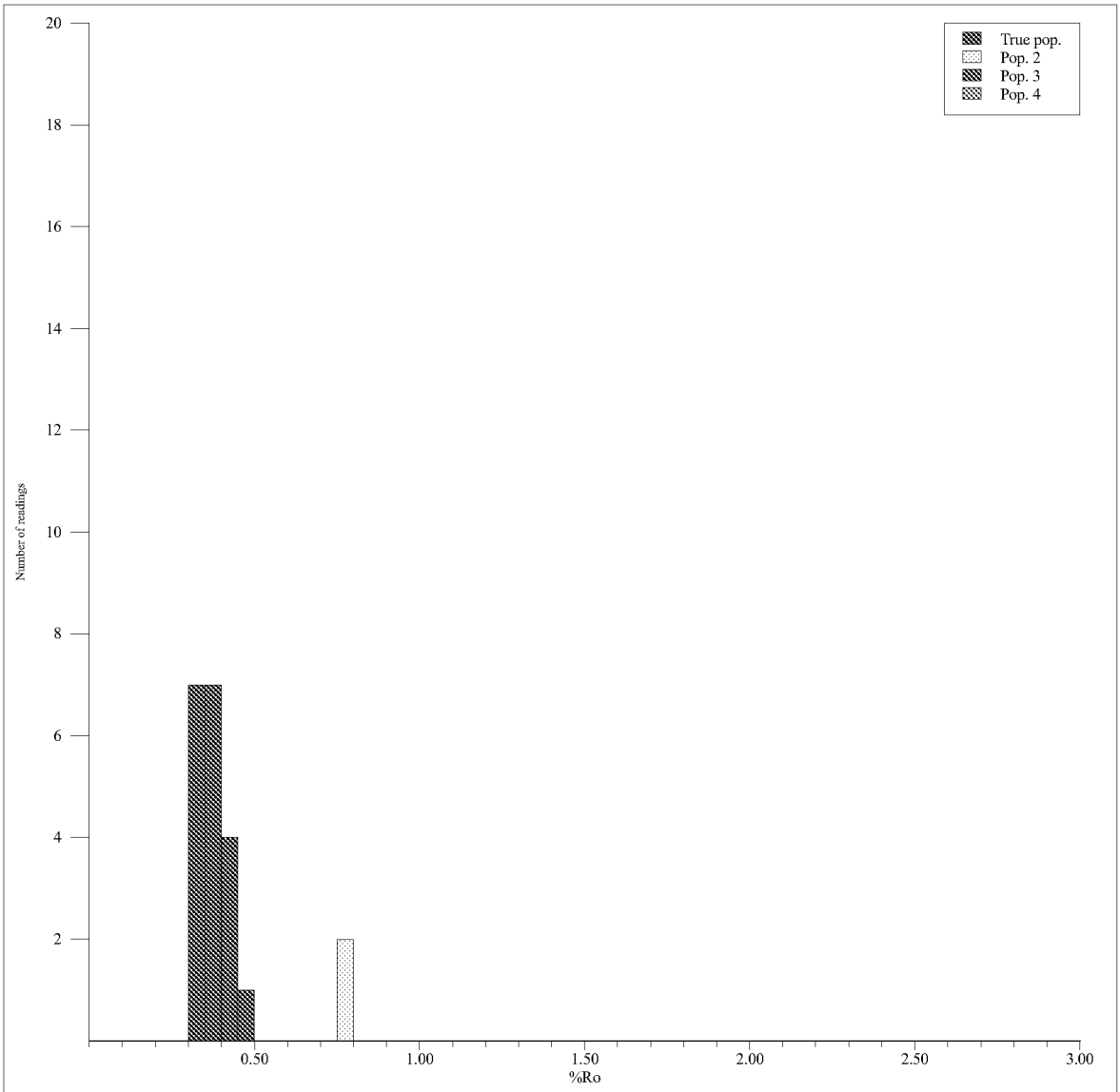
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	o
Particle surface quality	o
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.33±0.05	0.21±0.00	0.74±0.03	0.89±0.00
Individual	0.280	0.209	0.704	0.894
measurements	0.282		0.727	
3	0.303		0.746	
4	0.303		0.766	
5	0.306			
6	0.306			
7	0.308			
8	0.313			
9	0.319			
10	0.347			
11	0.407			
12	0.412			
13	0.425			
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

Comments:
Siltstone has a moderate organic matter content that is dominated by inertinite, recycled vitrinite, minor indigenous vitrinite. A few areas are pyritic and heavily stained with bitumen. Yellow spores and trace mid orange spores(recycled?).



Sample info:

Well	25/11-24
Lower depth	2103
Sample type	DC
Lithology	coal
Preparation	HF
Date of analysis	12.07.2007
APT ID	41367

Quality rating:

Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	-
Particle size	o
Particle surface quality	-
Abundance of pyrite	o

Legend to quality rating:

No effect on the readings	o
Possibly too low readings	-
Possibly too high readings	+
Good quality	G
Moderate quality	M
Poor quality	P
Not vitrinite	X
Hydrocarbon staining	St

%Ro readings	**True pop.**	**Pop. 2**	**Pop. 3**	**Pop. 4**
%Mean±sd.	0.37±0.04	0.76±0.01		
Individual	0.317	0.760		
measurements	0.324	0.767		
3	0.329			
4	0.334			
5	0.339			
6	0.340			
7	0.341			
8	0.360			
9	0.368			
10	0.368			
11	0.380			
12	0.382			
13	0.392			
14	0.399			
15	0.401			
16	0.408			
17	0.413			
18	0.418			
19	0.459			
20				
21				
22				
23				
24				
25				
26				

Comments:
Coaly shale is dominated by vitrinite with significant inertinite and sporinite. Liptinite rich coal contains abundant yellow-orange fluorescing spores (moderate to high intensity).

Experimental Procedures

All procedures follow NIGOGA, 4th Edition. Below are brief descriptions of procedures/analytical conditions.

Vitrinite reflectance analysis

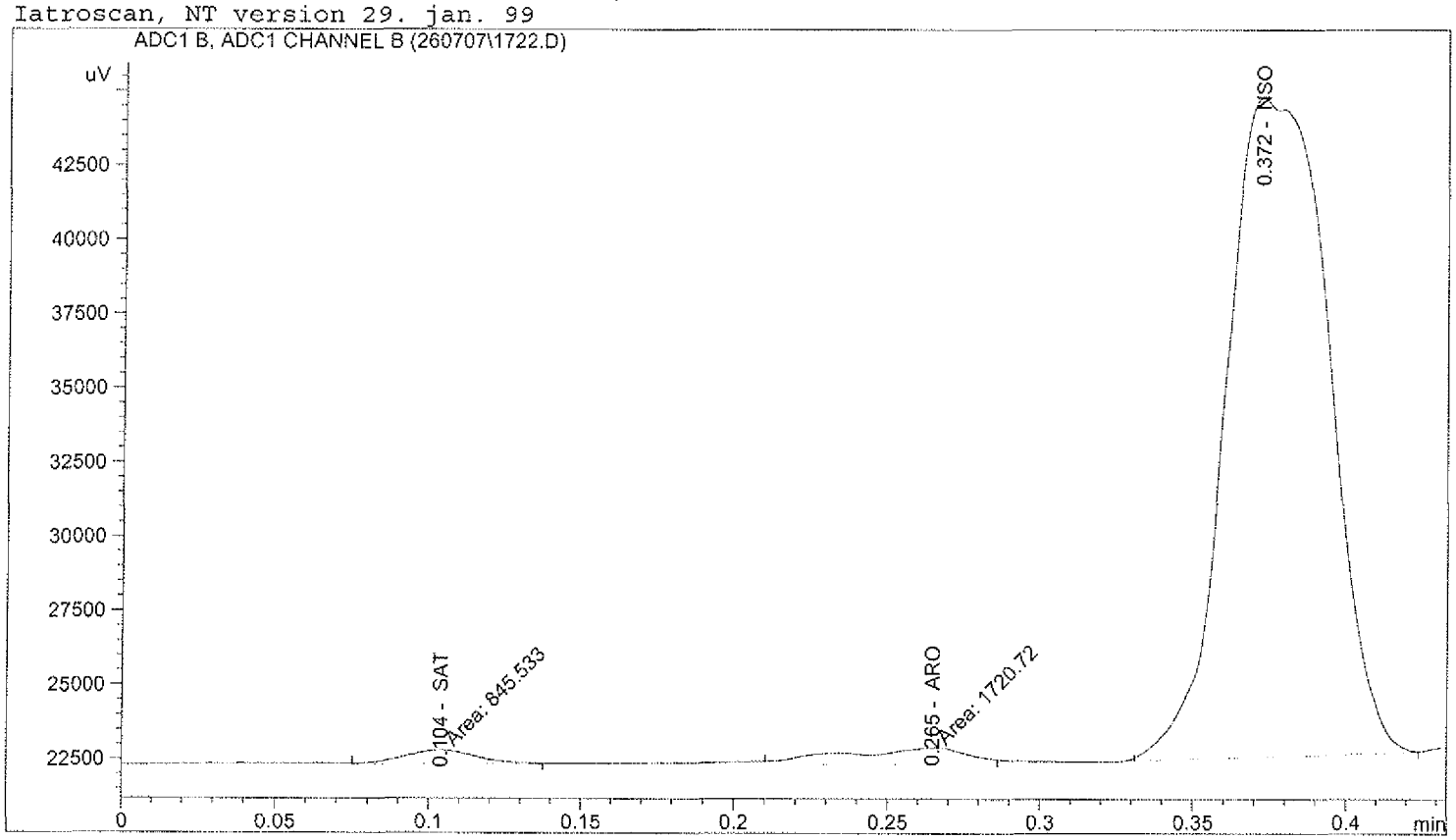
Methods closely follow the guidelines set out in the International Organization for Standardization publications ISO 7404-2, ISO 7404-3 and ISO 7404-5 but vary as follows. Crushed particles were cold set into an epoxy resin block. The set sample was ground and polished using an automated Buehler Ecomet 3®, with an Automet 2® head, polishing system. The sample was ground sequentially using 240, 400, 600, 1200 carborundum papers and isopropanol as lubricant. After each grinding stage the sample was washed with alcohol to remove debris and prevent swelling.

Three polishing laps covered with Buehler Mastertex® short-nap cloth were loaded with alumina powders of decreasing grain size and used in the following sequence; 1 μm, 0.3 μm and 0.05 μm. Isopropanol was used as a lubricant during polishing. After each polishing the sample was washed in alcohol to remove debris. Finally, the block was hand-buffed to remove fine smears and checked under a microscope for polish quality and particle relief. Vitrinite reflectance determination was performed in a dark-room using a Zeiss Standard Universal research microscope-photometer system (MPM01K) equipped with a tungsten-halogen lamp (12V, 100w), a Epiplan-Neofluar 40/0.90 oil objective, filtered 546 nm incident light and Zeiss immersion oil (n_e 1.517@ 23ºC). The pinhole measuring diaphragm was set to 0.5 μm diameter and a lamp field stop reduced interfering reflectances during measurement.

Glass and mineral standards of known reflectance were used for calibration. A Zeiss triple glass standard with reflectances of 0.506 %, 1.025 % and 1.817 % was used in addition to McCrone® Yttrium-aluminum-Garnet (0.917 %), Spinel (0.413 %) and Cubic Zirconium (3.256 %) standards. The standards are kept in dust free boxes at constant temperature and humidity. Random reflectance measurements were made (*i.e.*, no rotation of the microscope stage) in non-polarized light. Data were acquired using a Zeiss PMI-2, interfaced for computer data acquisition and processing. Photometer linearity tests were performed using all six standards and vitrinite analysis was conducted only if the correlation coefficient was ≥0.999. Three standards were measured, each in triplicate on different spots on the standard surface, at the beginning of the analysis and every 15 min. during analyses

Appendix 2
Group type distribution
Iatroscan data

```
==========================================================================
Injection Date  : 7/26/07 10:09:31 AM          Seq. Line :   2
Sample Name     : 25/11-24 1722m                    Vial :   2
Acq. Operator   : Marian                             Inj :   1
                                              Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/20/07 9:56:27 AM by Ina
Iatroscan, NT version 29. jan. 99
```




```
==========================================================================
                        External Standard Report
==========================================================================

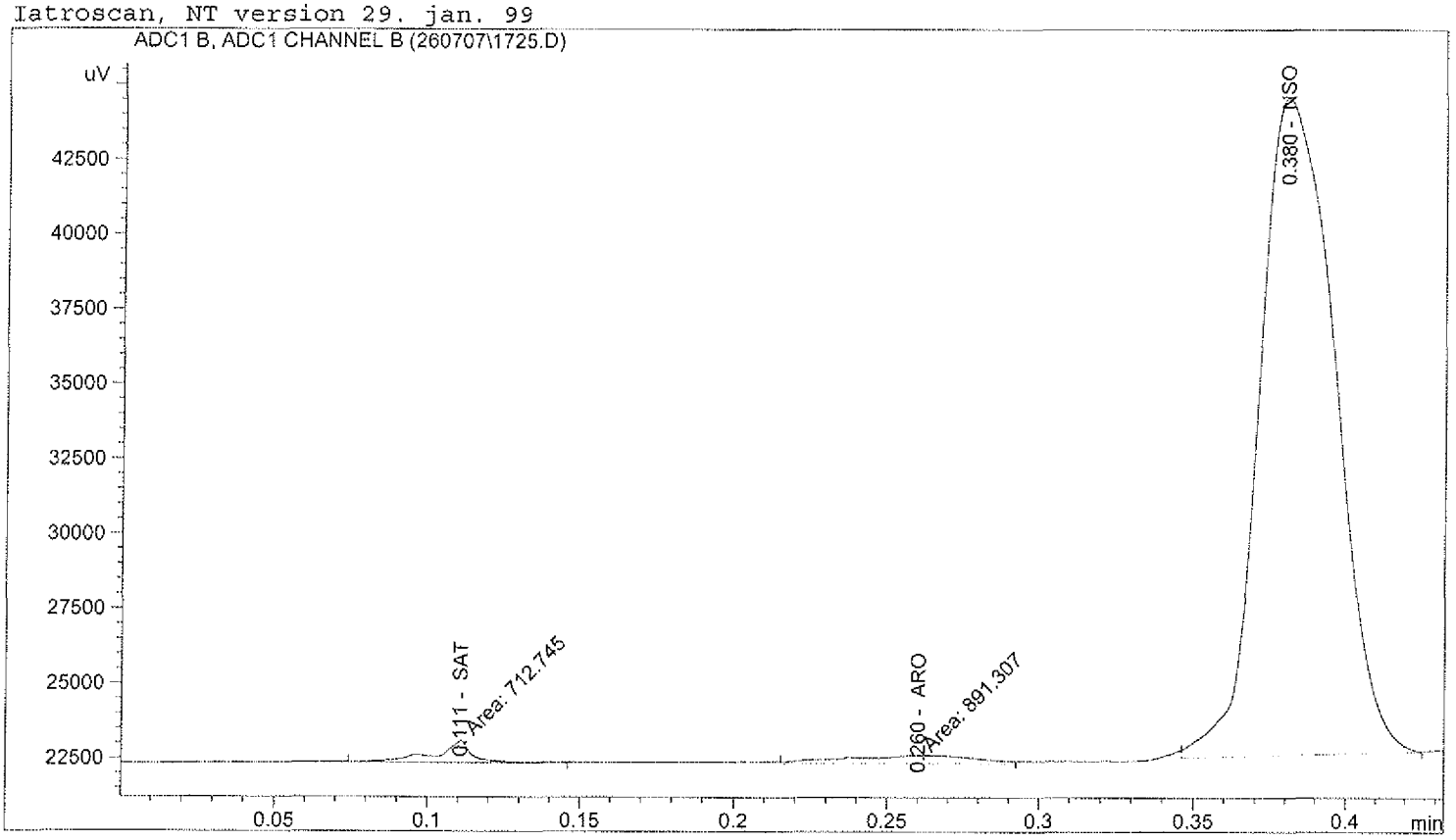
 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\260707\1722.D
 Calib. Data Modified     : 7/11/07 1:32:19 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	845.5	1.6	1.000000	845.5	1.6
ARO	1720.7	3.2	1.000000	1720.7	3.2
NSO	51517.3	95.3	1.000000	51517.3	95.3
Totals :	54083.6			54083.6	

```
==========================================================================
                          *** End of Report ***
```

```
==========================================================================
Injection Date  : 7/26/07 10:10:30 AM          Seq. Line :   3
Sample Name     : 25/11-24 1725m                    Vial :   3
Acq. Operator   : Marian                             Inj :   1
                                              Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/20/07 9:56:27 AM by Ina
Iatroscan, NT version 29. jan. 99
```




```
==========================================================================
                        External Standard Report
==========================================================================

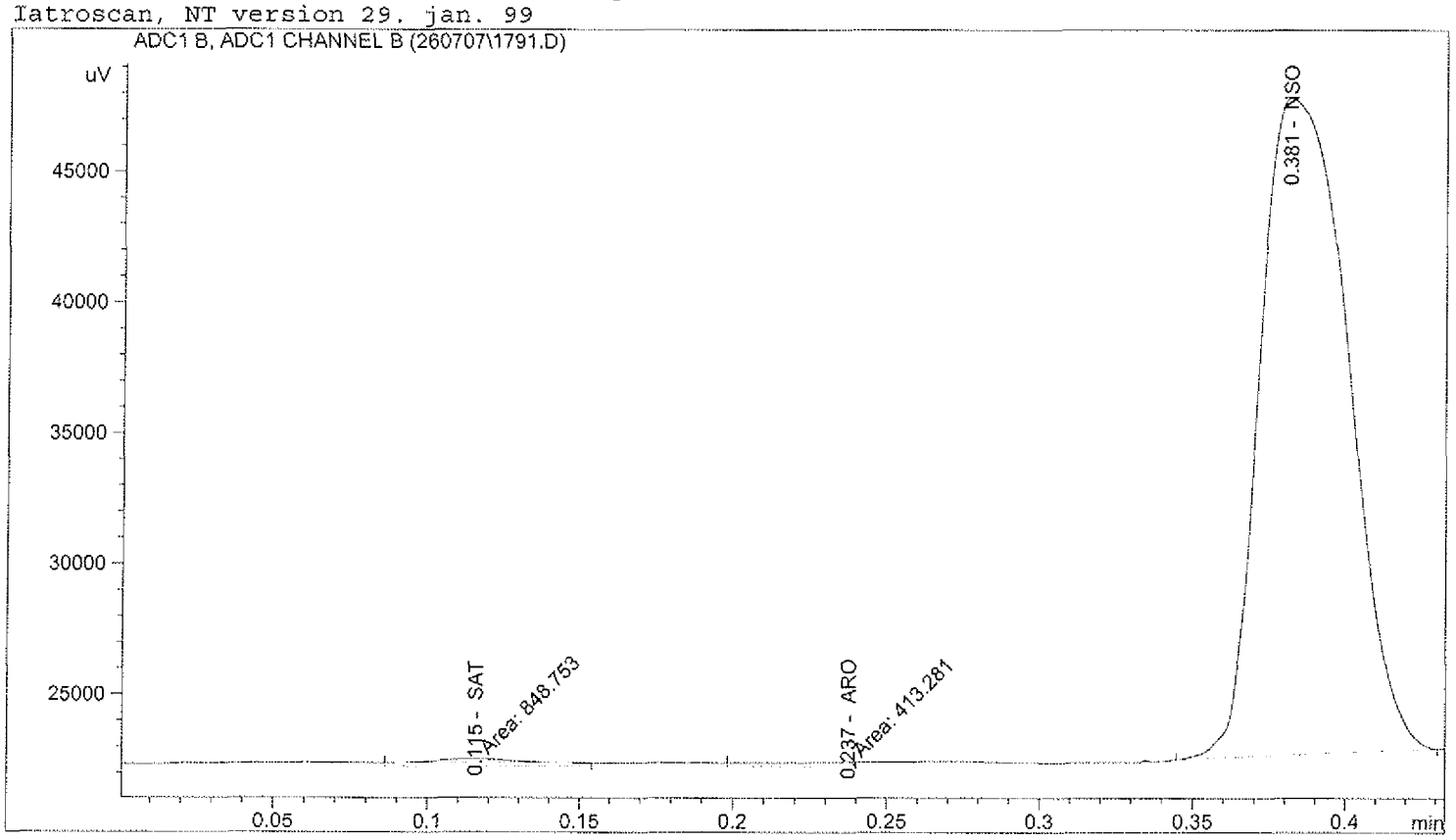
 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\260707\1725.D
 Calib. Data Modified     : 7/11/07 1:32:19 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	712.7	1.8	1.000000	712.7	1.8
ARO	891.3	2.2	1.000000	891.3	2.2
NSO	38121.3	96.0	1.000000	38121.3	96.0
Totals :	39725.4			39725.4	

```
==========================================================================
                        *** End of Report ***
```

```
==========================================================================
Injection Date  : 7/26/07 10:11:29 AM          Seq. Line :   4
Sample Name     : 25/11-24 1791m                    Vial :   4
Acq. Operator   : Marian                             Inj :   1
                                              Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/20/07 9:56:27 AM by Ina
Iatroscan, NT version 29. jan. 99
```




```
==========================================================================
                        External Standard Report
==========================================================================

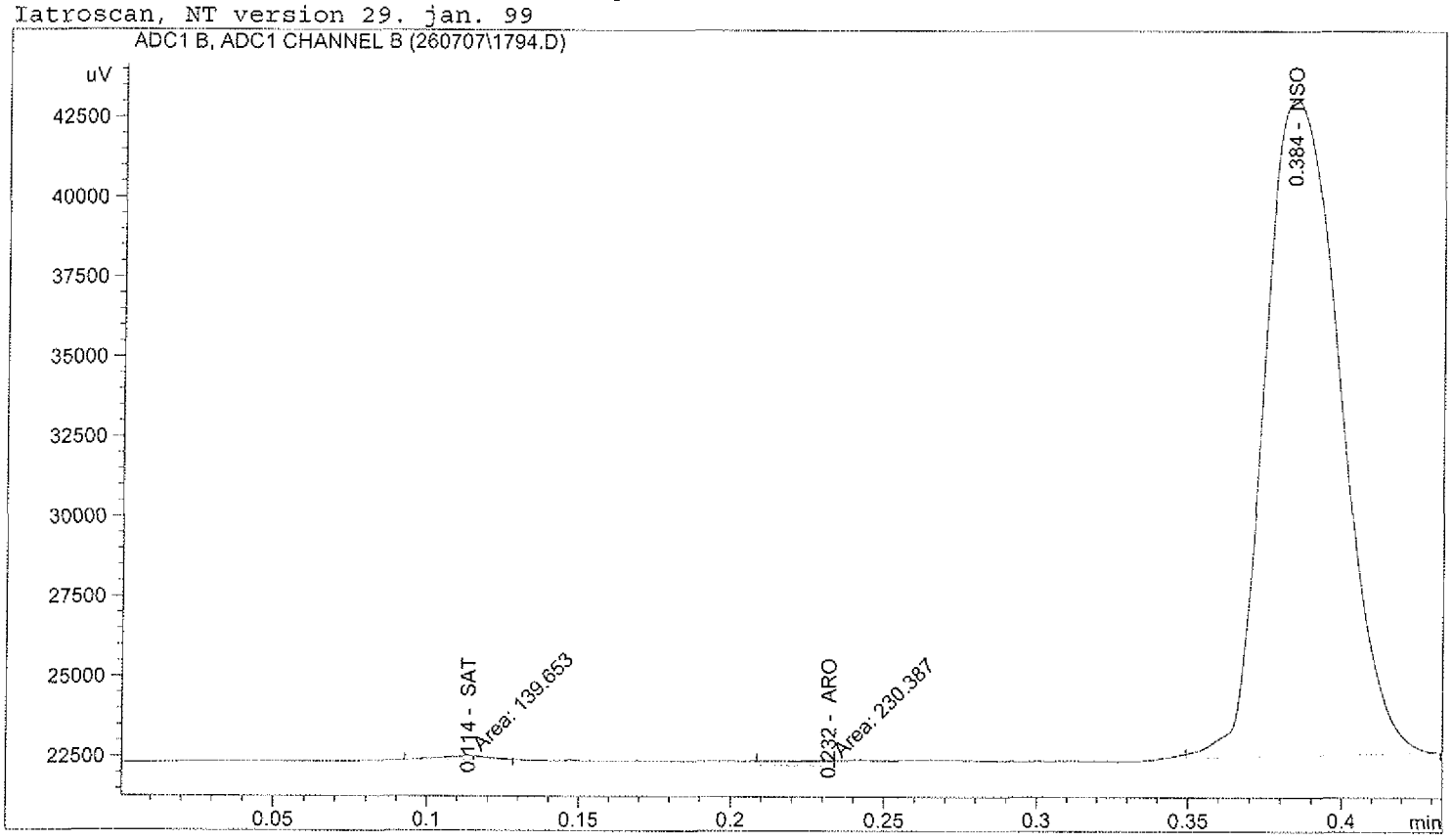
 Sorted by Signal
 Data File               : C:\HPCHEM\1\DATA\260707\1791.D
 Calib. Data Modified    : 7/11/07 1:32:19 PM
 Multiplier              : 1
 Dilution                : 1
 Sample Amount           : 0
 Ref Uncal. Peaks        : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	848.8	1.6	1.000000	848.8	1.6
ARO	413.3	0.8	1.000000	413.3	0.8
NSO	50498.6	97.6	1.000000	50498.6	97.6
Totals :	51760.6			51760.6	

```
==========================================================================
                        *** End of Report ***
```

```
==========================================================================
Injection Date  : 7/26/07 10:12:28 AM          Seq. Line :   5
Sample Name     : 25/11-24 1794m                    Vial :   5
Acq. Operator   : Marian                             Inj :   1
                                              Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/20/07 9:56:27 AM by Ina
Iatroscan, NT version 29. jan. 99
```




```
==========================================================================
                        External Standard Report
==========================================================================

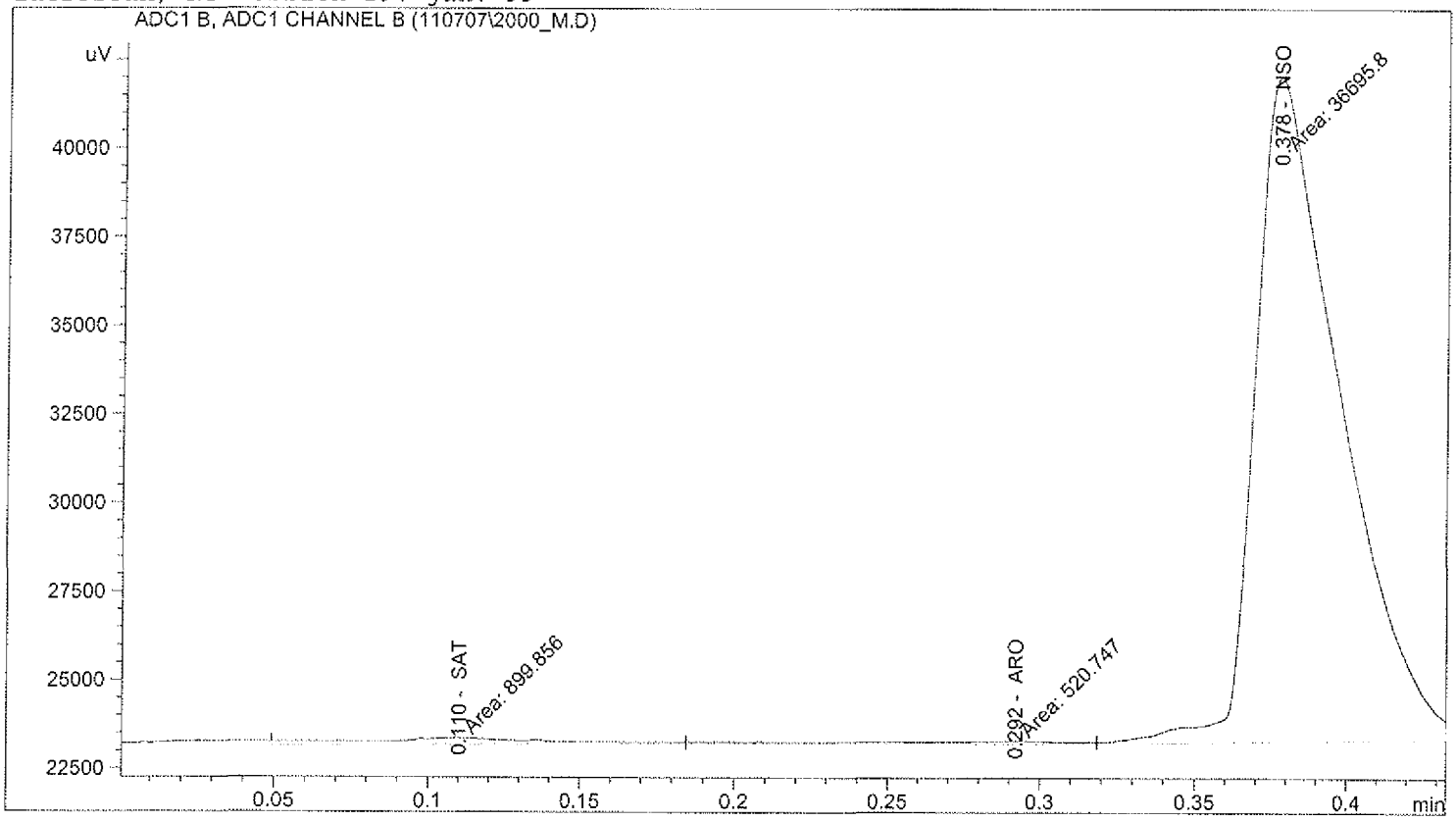
 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\260707\1794.D
 Calib. Data Modified     : 7/11/07 1:32:19 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	139.7	0.4	1.000000	139.7	0.4
ARO	230.4	0.6	1.000000	230.4	0.6
NSO	35233.3	99.0	1.000000	35233.3	99.0
Totals :	35603.3			35603.3	

```
==========================================================================
                        *** End of Report ***
```

```
Injection Date  : 7/11/07 1:22:09 PM          Seq. Line :   9
Sample Name     : 25/11-24 2000mud               Vial :   9
Acq. Operator   : Anita                          Inj :   1
                                           Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Analysis Method : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/11/07 1:25:46 PM by Anita
                  (modified after loading)
Iatroscan, NT version 29. jan. 99
```



External Standard Report

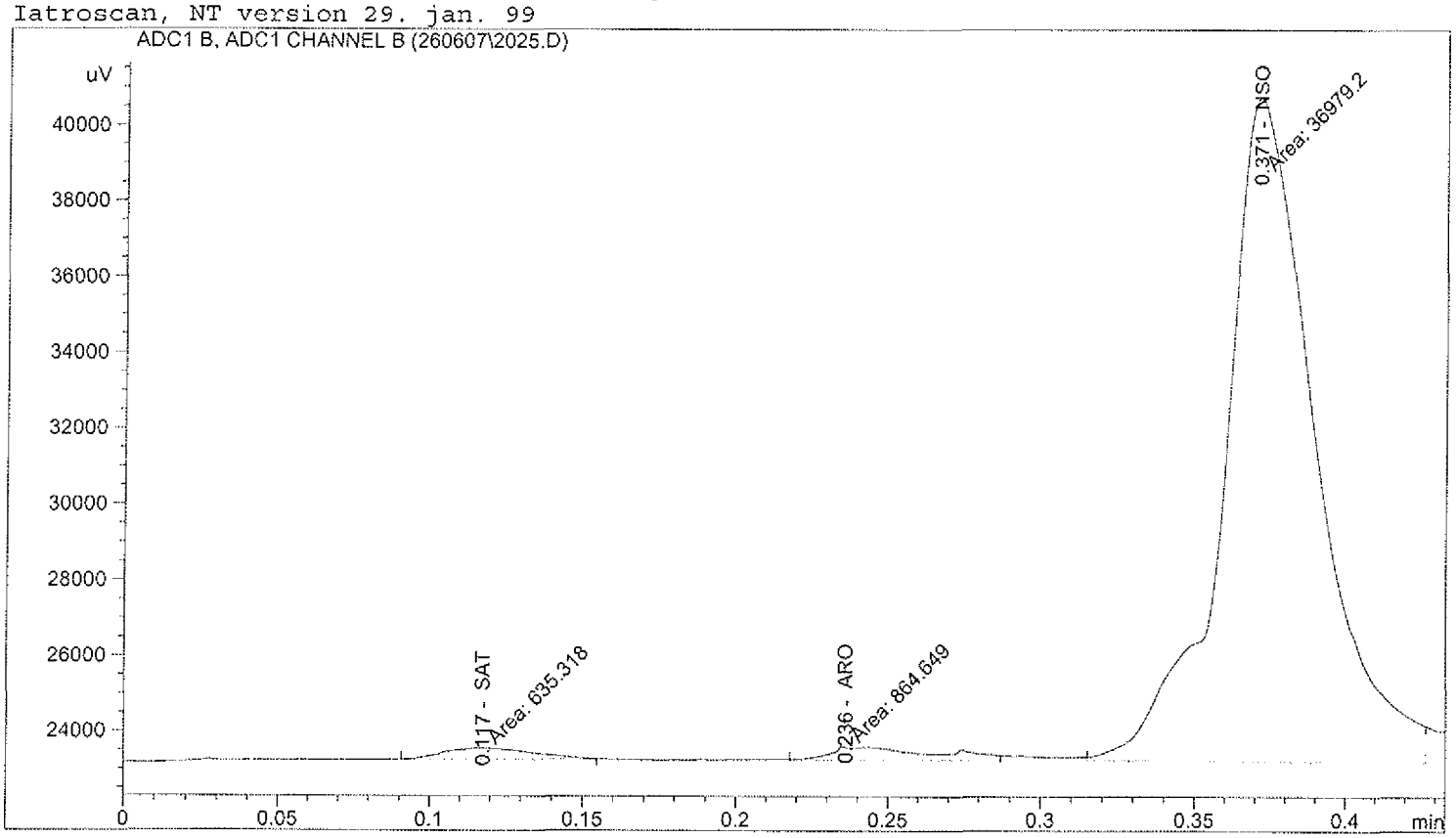
```
Sorted by Signal
Data File               : C:\HPCHEM\1\DATA\110707\2000_M.D
Calib. Data Modified    : 7/11/07 1:25:44 PM
Multiplier              : 1
Dilution                : 1
Sample Amount           : 0
Ref Uncal. Peaks        : 0
```

Signal 1 ADC1 B, ADC1 CHANNEL B

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	899.9	2.4	1.000000	899.9	2.4
ARO	520.7	1.4	1.000000	520.7	1.4
NSO	36695.8	96.3	1.000000	36695.8	96.3
Totals :	38116.4			38116.4	

*** End of Report ***

```
Injection Date  : 6/25/07 3:17:31 PM          Seq. Line :   8
Sample Name     : 25/11-24 2025m                 Vial :   8
Acq. Operator   : anita                          Inj :   1
                                           Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Analysis Method : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 6/25/07 3:32:23 PM by anita
                  (modified after loading)
Iatroscan, NT version 29. jan. 99
```



External Standard Report

```
Sorted by Signal
Data File               : C:\HPCHEM\1\DATA\260607\2025.D
Calib. Data Modified    : 6/25/07 3:32:23 PM
Multiplier              : 1
Dilution                : 1
Sample Amount           : 0
Ref Uncal. Peaks        : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	635.3	1.7	1.000000	635.3	1.7
ARO	864.6	2.2	1.000000	864.6	2.2
NSO	36979.2	96.1	1.000000	36979.2	96.1
Totals :	38479.2			38479.2	

*** End of Report ***

```
==========================================================================
Injection Date  : 6/25/07 3:18:30 PM          Seq. Line :   9
Sample Name     : 25/11-24 2028m                   Vial :   9
Acq. Operator   : anita                            Inj :   1
                                           Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Analysis Method : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 6/25/07 3:32:23 PM by anita
                  (modified after loading)
Iatroscan, NT version 29. jan. 99
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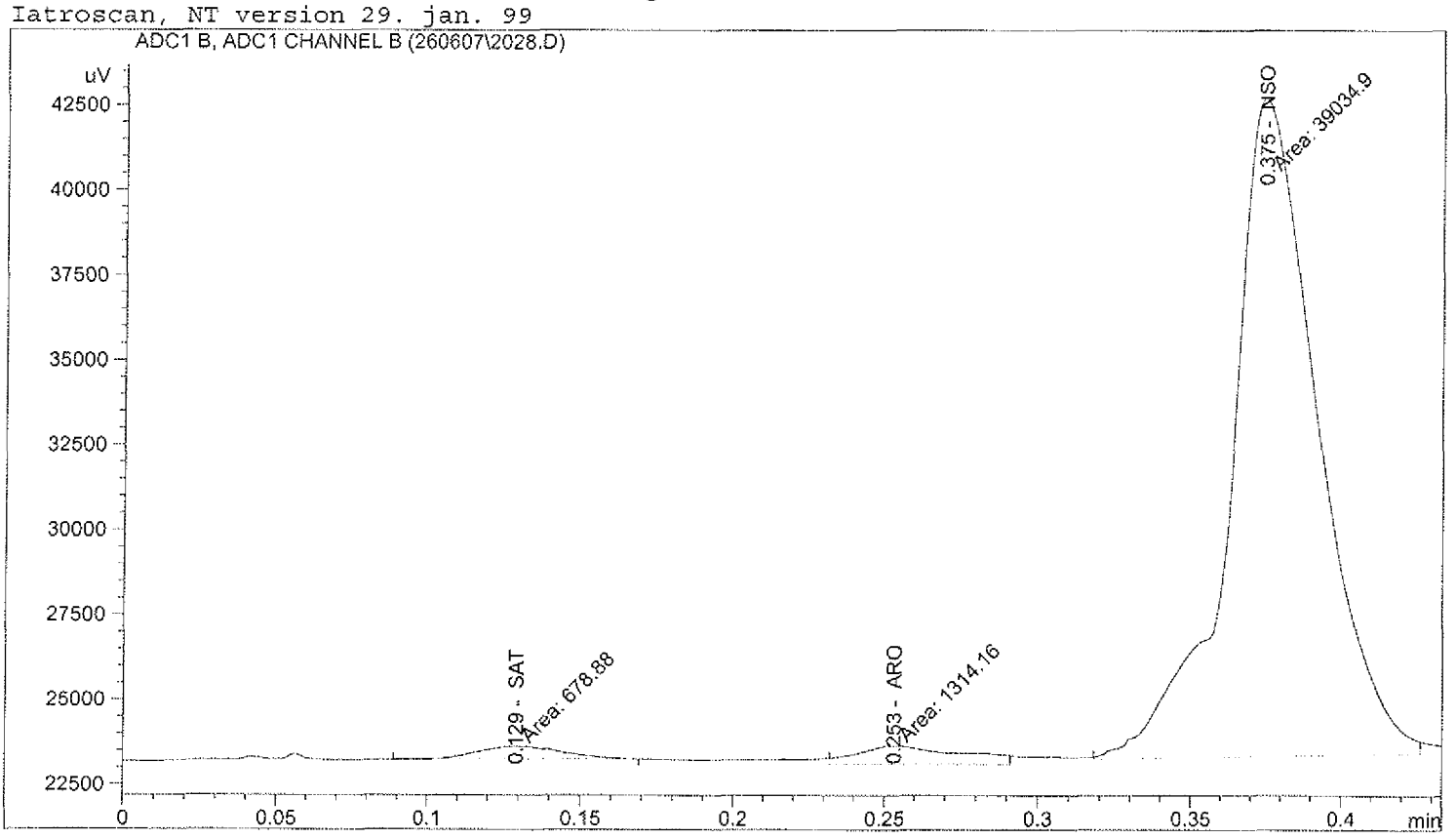



```
==========================================================================
                        External Standard Report
==========================================================================

 Sorted by Signal
 Data File               : C:\HPCHEM\1\DATA\260607\2028.D
 Calib. Data Modified    : 6/25/07 3:32:23 PM
 Multiplier              : 1
 Dilution                : 1
 Sample Amount           : 0
 Ref Uncal. Peaks        : 0

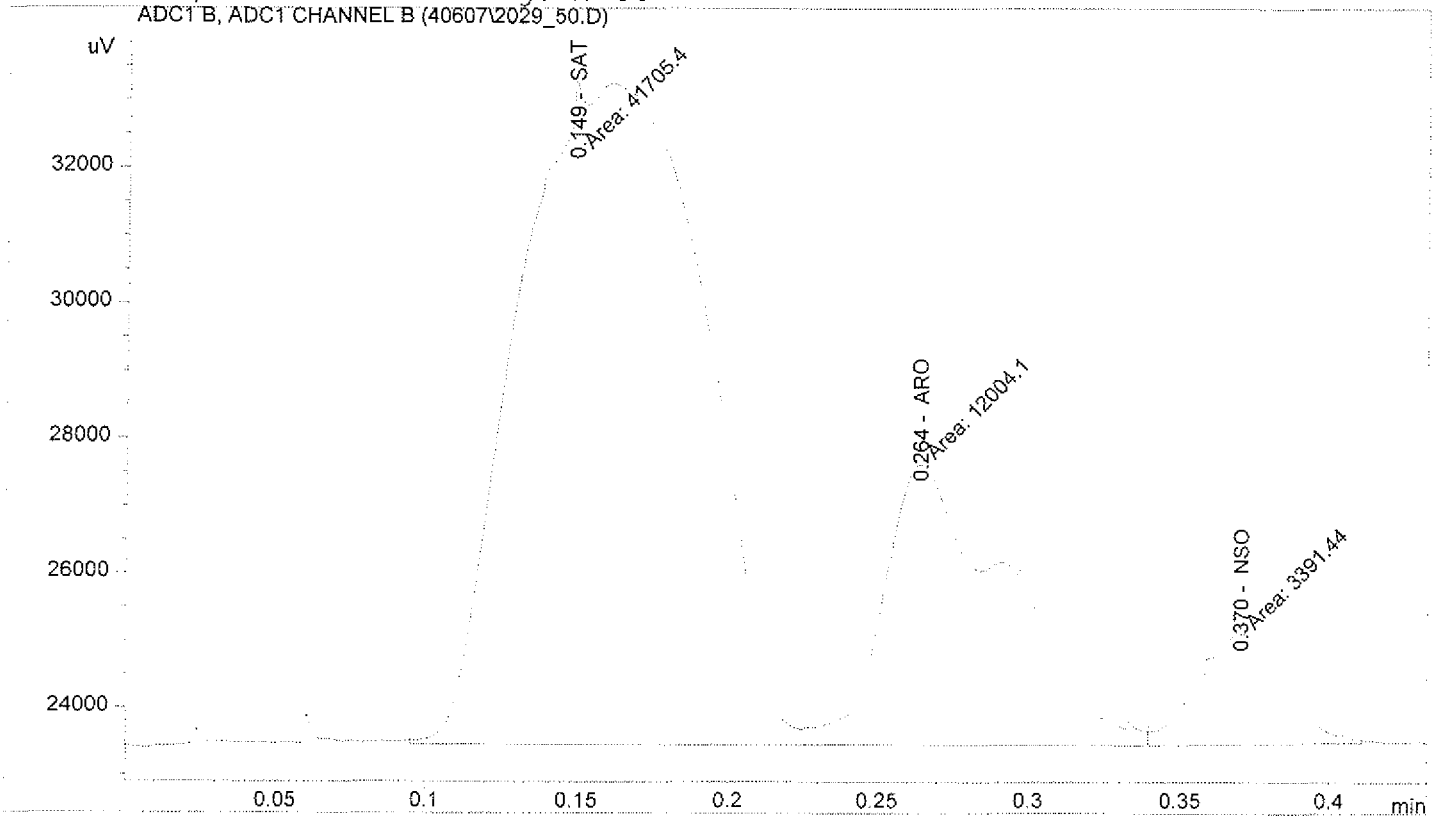
Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	678.9	1.7	1.000000	678.9	1.7
ARO	1314.2	3.2	1.000000	1314.2	3.2
NSO	39034.9	95.1	1.000000	39034.9	95.1
Totals :	41028.0			41028.0	

```
==========================================================================
                        *** End of Report ***
```

```
Injection Date  : 6/4/07 1:04:49 PM              Seq. Line :   6
Sample Name     : 25/11-24 2029,50                   Vial :   6
Acq. Operator   : anita                              Inj :   1
                                                Inj Volume : Manually

Acq. Method     : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Analysis Method : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 6/4/07 1:10:27 PM by anita
                  (modified after loading)
Iatroscan, NT version 29. jan. 99
```



External Standard Report

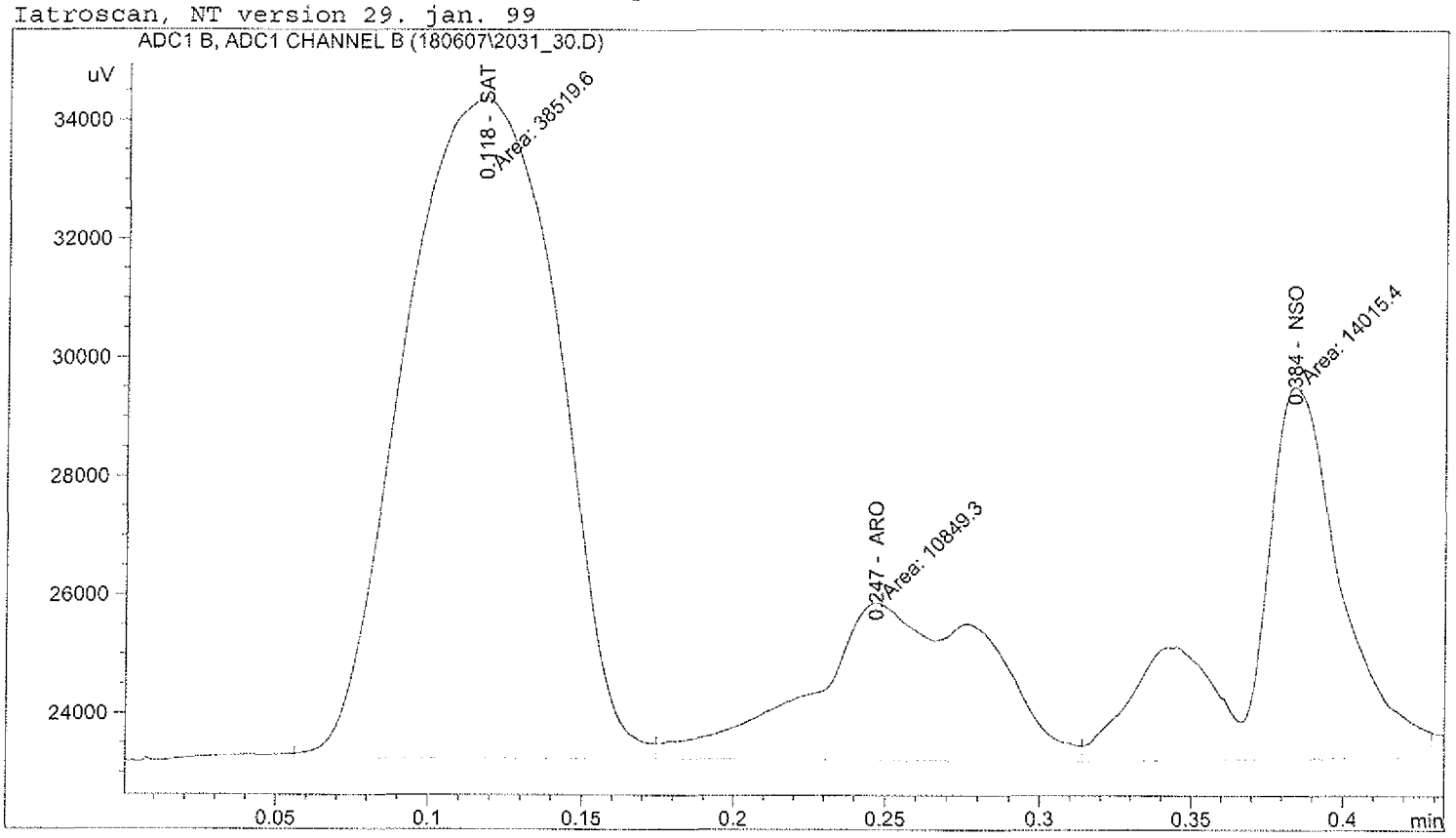
```
Sorted by Signal
Data File               : C:\HPCHEM\1\DATA\40607\2029_50.D
Calib. Data Modified    : 6/4/07 1:10:24 PM
Multiplier              : 1
Dilution                : 1
Sample Amount           : 0
Ref Uncal. Peaks        : 0
```

Signal 1 ADC1 B, ADC1 CHANNEL B

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	41705.4	73.0	1.000000	41705.4	73.0
ARO	12004.1	21.0	1.000000	12004.1	21.0
NSO	3391.4	5.9	1.000000	3391.4	5.9
Totals :	57100.9			57100.9	

*** End of Report ***

```
==========================================================================
Injection Date  : 6/18/07 1:22:20 PM          Seq. Line :   8
Sample Name     : 25/11-24 2031,30               Vial :   8
Acq. Operator   : anita                          Inj :   1
                                           Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Iatroscan, NT version 29. jan. 99
```




```
==========================================================================
                        External Standard Report
==========================================================================

 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\180607\2031_30.D
 Calib. Data Modified     : 10/31/06 2:46:11 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	38519.6	60.8	1.000000	38519.6	60.8
ARO	10849.3	17.1	1.000000	10849.3	17.1
NSO	14015.4	22.1	1.000000	14015.4	22.1
Totals :	63384.3			63384.3	

```
==========================================================================
                        *** End of Report ***
```

```
==========================================================================
Injection Date  : 6/18/07 1:21:22 PM          Seq. Line :   7
Sample Name     : 25/11-24 2036,50               Vial :   7
Acq. Operator   : anita                          Inj :   1
                                           Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Iatroscan, NT version 29. jan. 99
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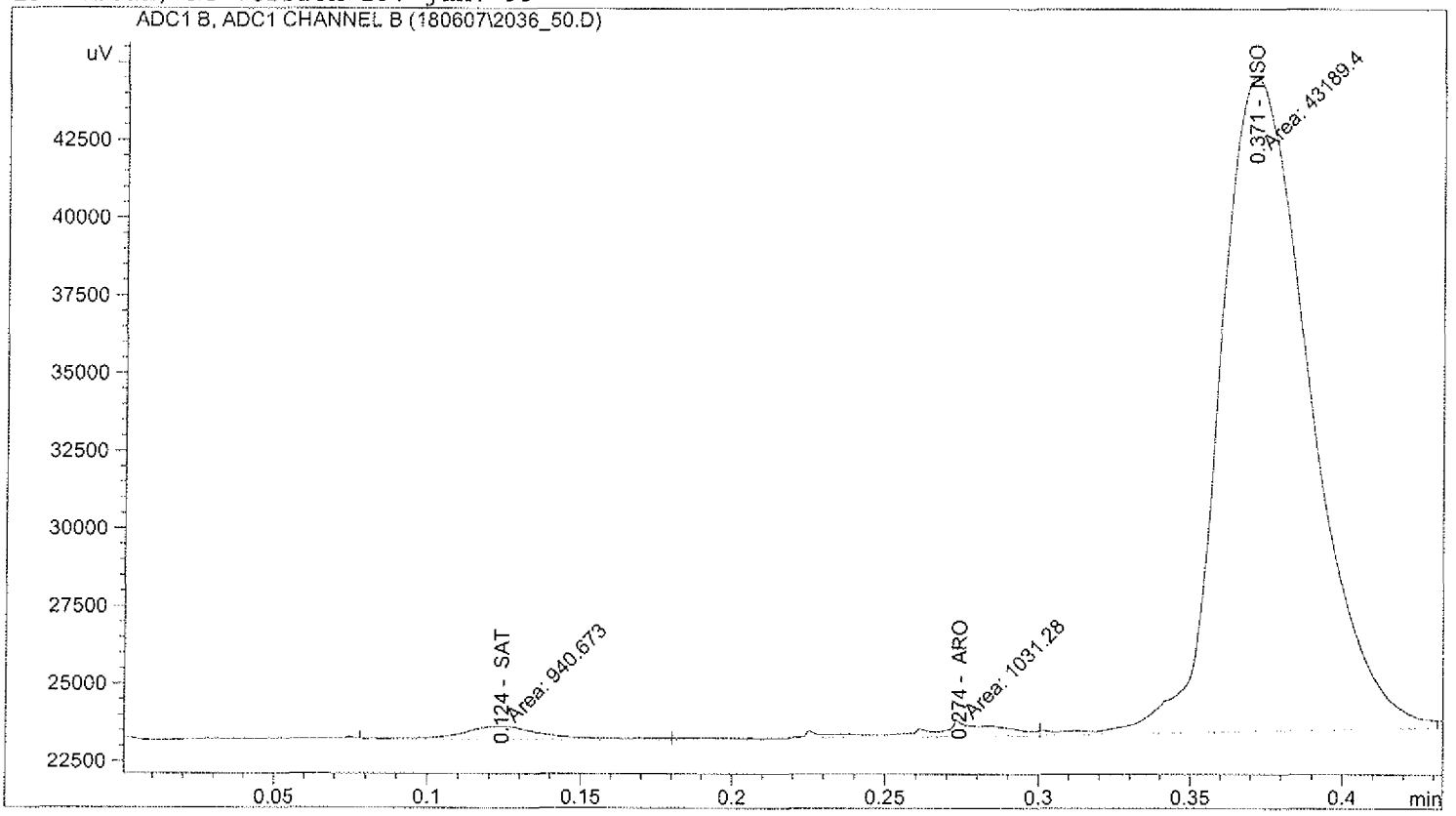


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==========================================================================
                        External Standard Report
==========================================================================

 Sorted by Signal
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 Calib. Data Modified     : 10/31/06 2:46:11 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	940.7	2.1	1.000000	940.7	2.1
ARO	1031.3	2.3	1.000000	1031.3	2.3
NSO	43189.4	95.6	1.000000	43189.4	95.6
Totals :	45161.4			45161.4	

```
==========================================================================
                        *** End of Report ***
```

```
==========================================================================
Injection Date  : 6/18/07 1:20:24 PM          Seq. Line :   6
Sample Name     : 25/11-24 2040,80                Vial :   6
Acq. Operator   : anita                           Inj :   1
                                           Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Iatroscan, NT version 29. jan. 99
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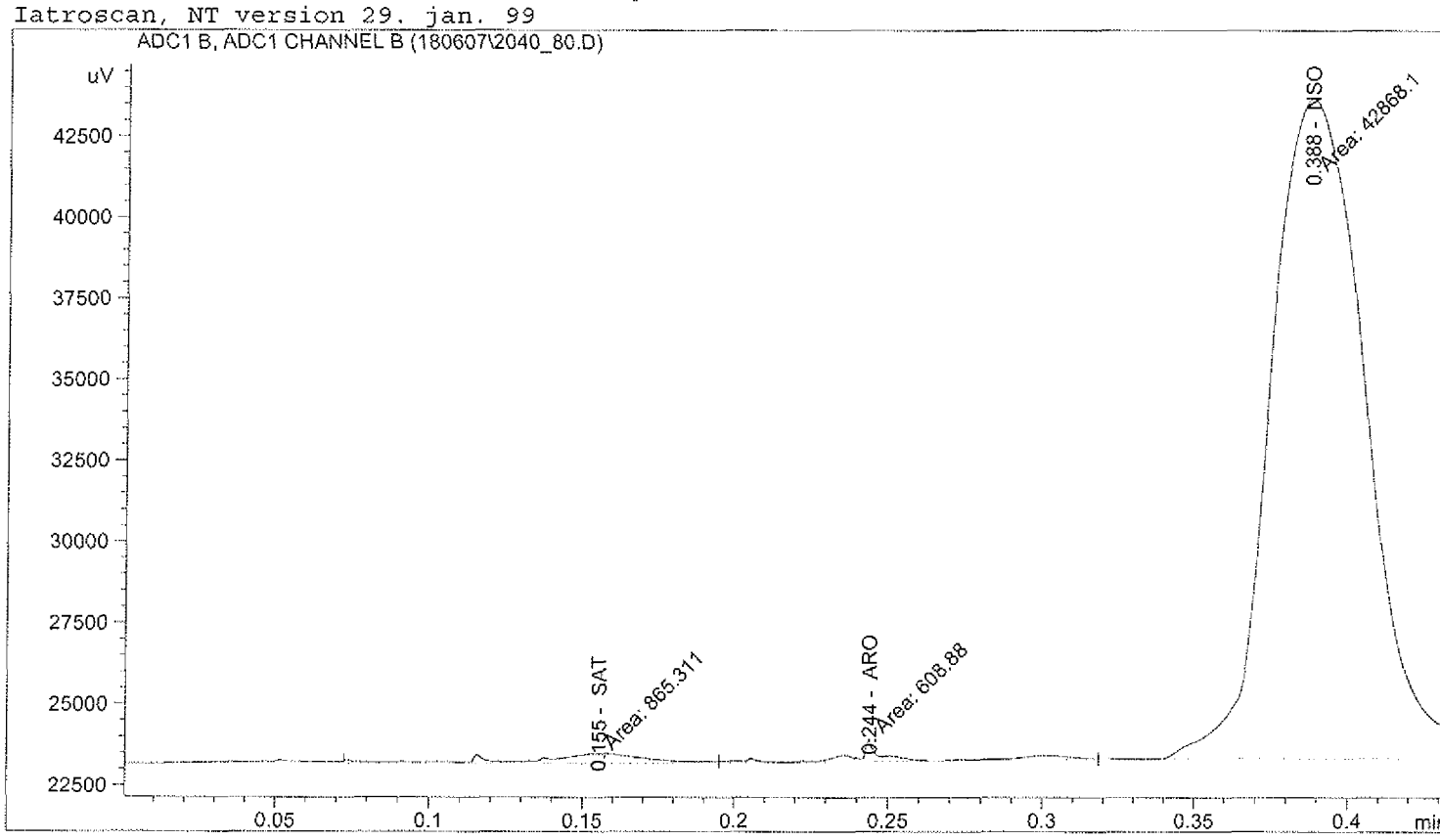


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==========================================================================
                        External Standard Report
==========================================================================

 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\180607\2040_80.D
 Calib. Data Modified     : 10/31/06 2:46:11 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B

    Name       Area       Area%    Amt/Area    Amount     Amount%
-----------|----------|----------|----------|----------|-----------
SAT              865.3        2.0   1.000000      865.3       2.0
ARO              608.9        1.4   1.000000      608.9       1.4
NSO            42868.1       96.7   1.000000    42868.1      96.7

Totals :       44342.3                          44342.3
==========================================================================
                          *** End of Report ***
```

```
==========================================================================
Injection Date  : 6/18/07 1:19:24 PM          Seq. Line :   5
Sample Name     : 25/11-24 2049,50               Vial :   5
Acq. Operator   : anita                          Inj :   1
                                           Inj Volume : Manually
Method          : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Iatroscan, NT version 29. jan. 99
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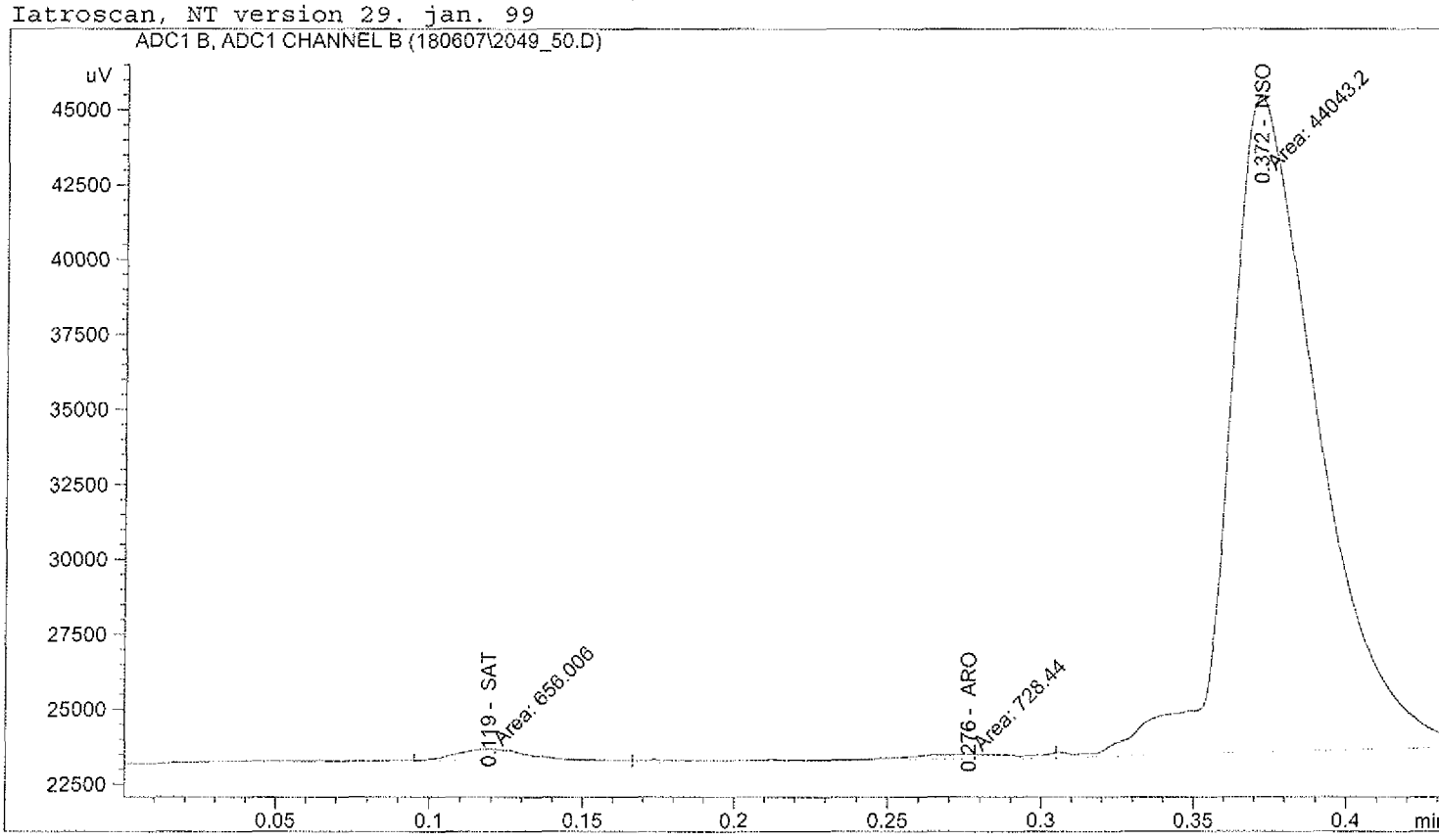


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==========================================================================
                        External Standard Report
==========================================================================

 Sorted by Signal
 Data File                : C:\HPCHEM\1\DATA\180607\2049_50.D
 Calib. Data Modified     : 10/31/06 2:46:11 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	656.0	1.4	1.000000	656.0	1.4
ARO	728.4	1.6	1.000000	728.4	1.6
NSO	44043.2	97.0	1.000000	44043.2	97.0
Totals :	45427.7			45427.7	

```
==========================================================================
                        *** End of Report ***
```

```
==========================================================================
Injection Date  : 7/11/07 1:20:12 PM          Seq. Line :   7
Sample Name     : 25/11-24 2100mud                Vial :   7
Acq. Operator   : Anita                           Inj :   1
                                           Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 11/2/06 12:55:23 PM by anita
Analysis Method : C:\HPCHEM\1\METHODS\IATRO_A.M
Last changed    : 7/11/07 1:25:46 PM by Anita
                  (modified after loading)
Iatroscan, NT version 29. jan. 99
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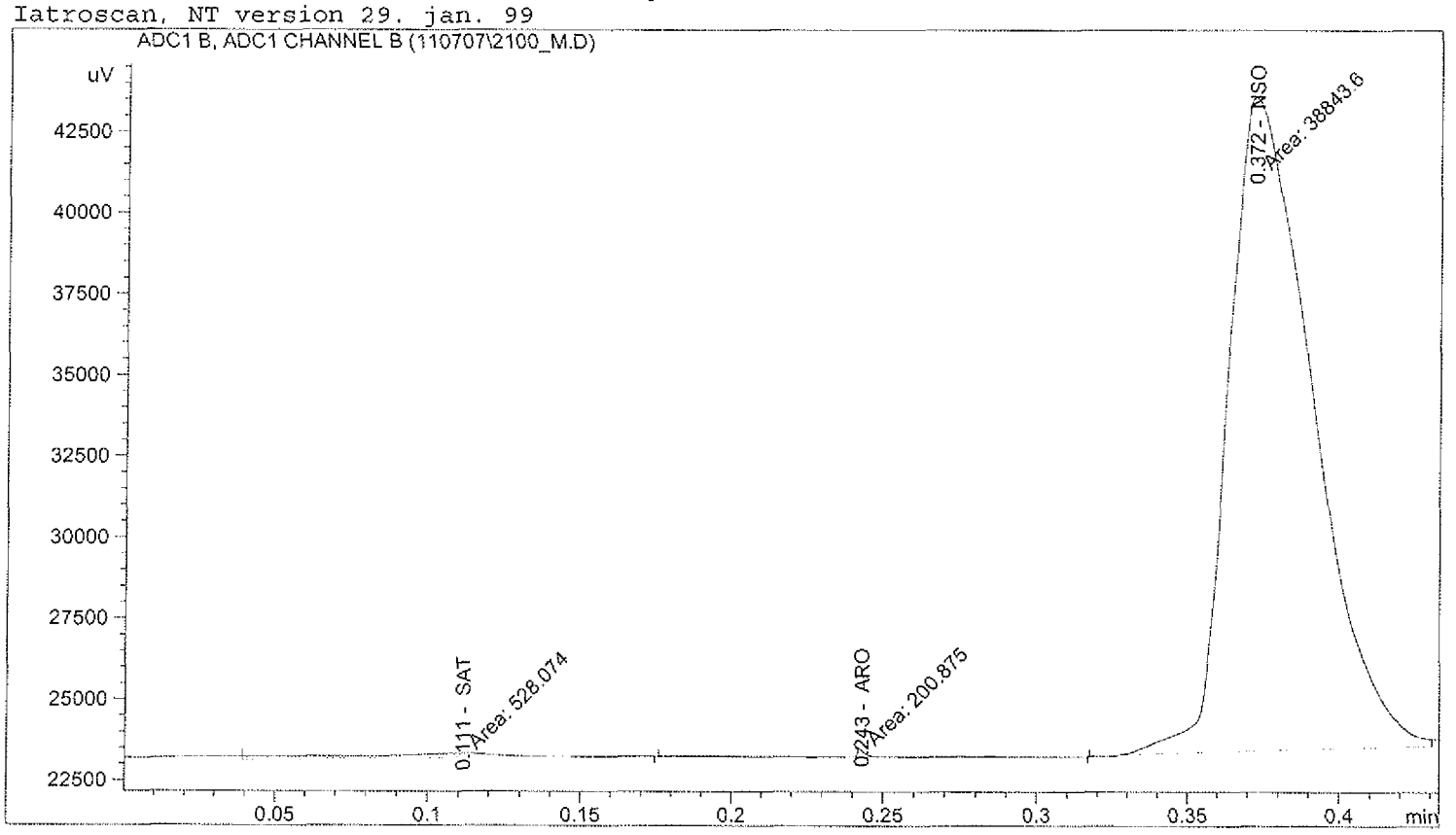


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                        External Standard Report
==========================================================================

 Sorted by Signal
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 Calib. Data Modified     : 7/11/07 1:25:44 PM
 Multiplier               : 1
 Dilution                 : 1
 Sample Amount            : 0
 Ref Uncal. Peaks         : 0

Signal 1 ADC1 B, ADC1 CHANNEL B
```

Name	Area	Area%	Amt/Area	Amount	Amount%
SAT	528.1	1.3	1.000000	528.1	1.3
ARO	200.9	0.5	1.000000	200.9	0.5
NSO	38843.6	98.2	1.000000	38843.6	98.2
Totals :	39572.5			39572.5	

```
==========================================================================
                        *** End of Report ***
```

Appendix 3
Headspace and included gas in canned DC samples

SINTEF

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REPORT

TITLE

Analyses of headspace and occluded gas (C1-C9) of 12 samples from well 25/11-24.

AUTHOR(S)

Kristin Lind

CLASSIFICATION	CLIENT(S)
Confidential	Norsk Hydro Produksjon AS
REPORT NO. 24.6733.00/01/07	

REG. NO.	DATE	PROJECT MANAGER	APPROVED
2007.042	7 June 2007	Kristin Lind	
NO. OF PAGES	NO. OF APPENDICES	LINE MANAGER	
33	-	Hans Martin Helset	

SUMMARY

This report contains tables and figures with data from gas chromatographic analysis of headspace and occluded gas of 12 canned cuttings from well 25/11-24. The yield data are expressed as µl/kg dry rock and the relative proportions in volume % of 83 hydrocarbons ranging from C1 to C9. Some geochemical relevant peak ratios are also listed and plotted.

KEYWORDS ENGLISH	KEYWORDS NORWEGIAN
Well 25/11-24	Brønn 25/11-24
Organic geochemistry	Organisk geokjemi
Gas analysis	Gassanalyse

SINTEF

Table of Contents

1. Introduction

Twelve canned cutting samples from the well 25/11-24 were received from Norsk Hydro Produksjon AS for gas chromatographic analysis of the C1 to C9 hydrocarbons in headspace and occluded gas (Order no.: 5400850).

This report contains the results of these analyses. The hydrocarbon concentrations of the headspace and occluded gas are expressed as µl gas per kg of dried cuttings, while the hydrocarbon composition is expressed in volume percent of all recorded hydrocarbons.

2. Experimental

2.1 Headspace gas

A septum was attached to the can and a sample of headspace gas was taken and injected into a gas chromatograph for analysis of C1 to C9 hydrocarbons.

The can was opened and the volume of the headspace was determined. The cuttings were washed with water (ca. 30 °C) on 4.0, 1.0 and 0.125 mm sieves in order to remove the drilling mud, and were then weighed and dried.

2.2 Occluded gas

Prior to drying, an aliquot of the 1-4 mm fraction was crushed in water for 10 minutes using a gas-tight ball mill. An aliquot of the evolved gas was injected into a gas chromatograph for analysis of C1 to C9 hydrocarbons.

2.3 Gas chromatographic analysis

The gas was analysed on a gas chromatograph fitted with a gas injector. The GC temperature program started at 35 °C, since separation of alkenes from alkanes was of no interest in this project. The instrument was fitted with a capillary column connected to an FID for hydrocarbon detection. Details of the instrumentation are listed in Table 2.1.

Table 2.1 Analytical equipment

Gas chromatograph	Agilent 6890
Injector	Gas injector connected to a 1.0 ml loop
Columns	HP-PONA column: 50 m x 0.20 mm i.d, 0.5 µm film thickness.
Carrier gas	Helium
Detector	FID (250 °C)
Temperature program	35 °C (5 min.) - 8 °C/min. - 180 °C (10 min.)
Chromatographic data system	HP ChemStation Rev. A.10.01

2.4 Identification

Peaks were identified based on three Supelco Reference Standards, guidelines in "The Norwegian Industry Guide to Organic Geochemical Analyses" (Edition 4.0) and internal procedures. Figure 2.1 shows a gas chromatogram with the annotation used in this project. Identified compounds, retention indices and comments are listed in Table 2.2.

Table 2.2 Identified compounds with retention indices (RI) and comments. For peak labels see explanation below the table.

Peak label	RI (Kováts)	Comments
C1	100	
C2	158 + 200	Includes ethane and ethene
C3	300	Includes propane and propene
RI=316	316	Unknown
iC4	354	
C4ene	385	
nC4	400	
2,2-DMC3	410	
RI=418	418	Unknown
RI=434	434	Unknown
iC5	467	
RI=486 (C5ene)	486	
RI=493 (C5ene)	493	
nC5	500	
RI=529	529	Unknown
2,2-DMC4	531	
CyC5 + 2,3-DMC4	561	Separated in some analyses, but summed up in the tables
2-MC5	565	
RI=569	569	Unknown
3-MC5	581	
nC6	600	
2,2-DMC5	624	
MCyC5	627	
2,4-DMC5	630	
2,2,3TMC4	636	
Benzene	651	
3,3-DMC5	656	
CyC6	661	
2-MC6	668	
2,3-DMC5	670	
1,1-DMCyC5	674	
3-MC6	676	
c-1,3-DMCyC5	684	
t-1,3-DMCyC5	687	
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	690	
nC7	700	
MCyC6 + c-1,2-DMCyC5	725	
2,2-DMC6 + 1,1,3-TMCyC5	727	
2,5-DMC6 + 2,2,3-TMC5	734	May include E-CyC5
2,4-DMC6	736	
3,3-DMC6 + t-1,c-2,4-TMCyC5	744	May include c-1,t-2,4-TMCyC5
t-1,c-2,3-TMCyC5	751	
2,3,4-TMC5	754	
Toluene + 2,3,3-TMC5	759	
2,3-DMC6	763	May include 1,1,2-TMCyC5
2-M, 3-EC5	765	
2-MC7	768	
4-MC7 + 3-M,3-EC5	769	May also include an isomer of 3,4-DMC6

Peak label	RI (Kováts)	Comments
3,4-DMC6	773	Isomer
3-MC7 + c-1,t-2,3-TMCyC5	775	May also include c-1,3-DMCyC6
RI=781 (DMCyC6)	781	Possibly a DMCyC6 isomer
RI=783 (DMCyC6)	783	Possibly a DMCyC6 isomer
2,2,5-TMC6	786	
RI=790	791	Possibly a DMCyC6 isomer, minimum 2 compounds
RI=793	793	Possibly a DMCyC6 isomer, minimum 2 compounds
RI=796	796	Possibly CyC7 or a DMCyC6 isomer
nC8	800	Minimum 2 compounds
RI=804	804	Unknown
RI=807	807	Unknown
RI=814	814	Unknown
2,3,5-TMC6 + c-1,2-EMCyC5	819	
RI=821	821	Unknown
RI=825	825	Possibly 2,2-DMC7 or 2,4-DMC7
RI=831	831	Possibly 2,4-DMC7 or ECyC6
RI=833/834	833	Unknown, minimum 2 compounds
RI=837	837	Possibly ECyC6 and/or 2,6-DMC7, minimum 2 compounds
RI=843	843	Unknown
RI=846	846	Unknown
RI=849	849	Unknown
RI=852	852	Unknown
E-Benzene	855	
RI=860	860	Unknown, minimum 2 compounds
m+p-Xylene	863	
RI=867	867	Unknown
RI=870	870	Unknown, minimum 2 compounds
4-MC8 + 2-MC8	874	
RI=877/879	877	Unknown, minimum 2 compounds
RI=883	883	Possibly 3-MC8
o-Xylene	886	
RI=890	890	Unknown
RI=893	893	Unknown
RI=896	896	Unknown, minimum 2 compounds
nC9	900	

Explanations:

Structural groups	Parent structures	Numbers of functional groups	Names of functional groups	Steric configurations
n = normal	C1 = methane	D = di	M = methyl	c = cis
i = iso	C2 = ethane	T = tri	E = ethyl	t = trans
Cy = cyclo	etc.		P = propyl	o = ortho
				m = meta
				p = para

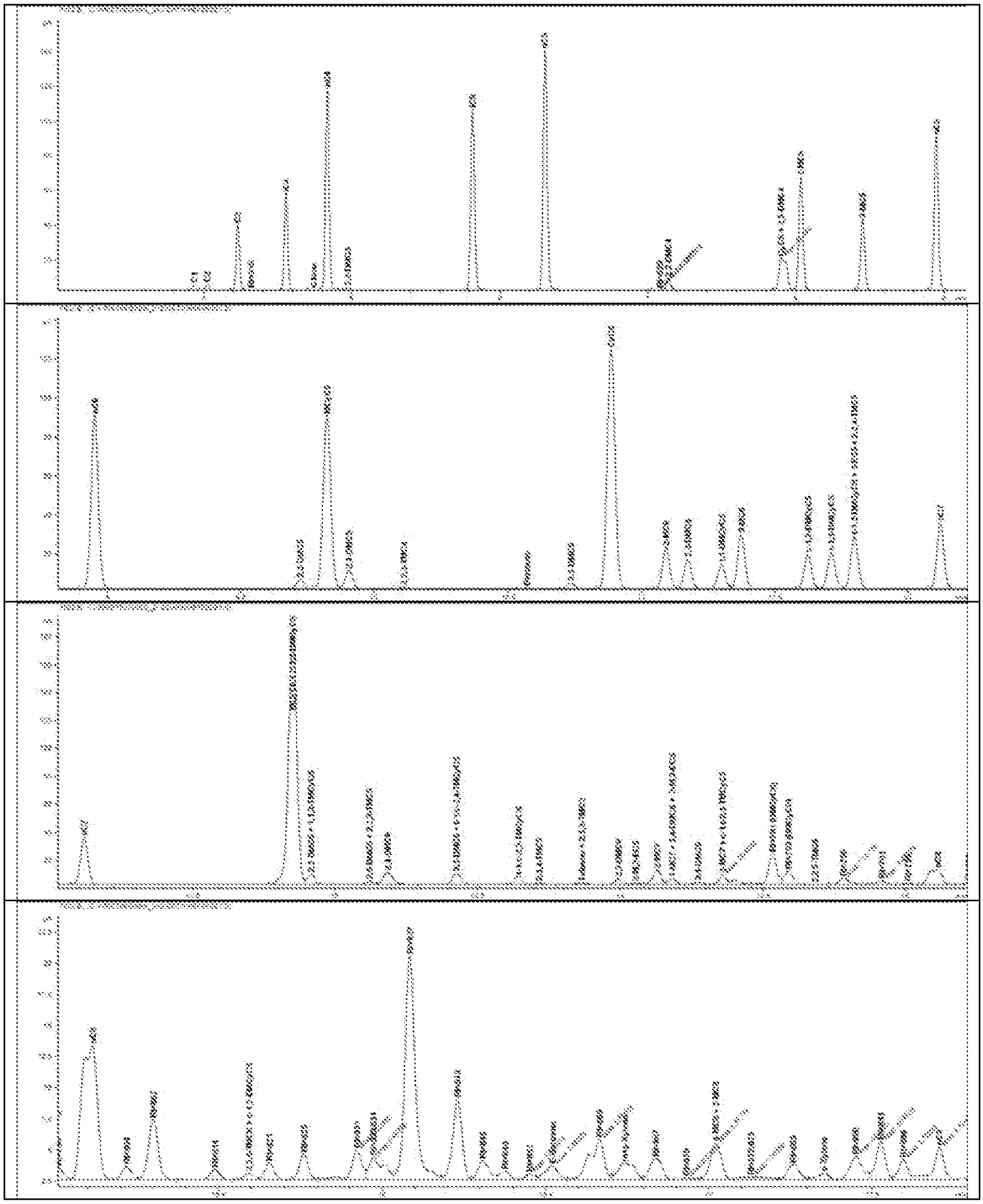


Figure 2.1 Gas chromatogram with peak annotation. Expanded views of the ranges C1 to n-C6, n-C6 to n-C7, n-C7 to n-C8 and n-C8 to n-C9.

2.5 Quantification

A 1000 ppm (µl/l) standard gas sample containing methane, ethane, propane, i-butane, n-butane, n-pentane and n-hexane was used for quantification. The capillary column was changed during the analysis period, and the peak areas of the standards obtained on the different columns are shown in Table 2.3 and Table 2.4. Average response factors for the different columns were calculated and used for quantification. The response

factor for n-C5 was used for all compounds eluting between n-C4 and n-C5 and so on. The response factors for the component groups C6-C7, C7-C8 and C8-C9 were extrapolated based on molecular mass.

A 100 ppm (µl/l) standard gas sample containing methane, ethane, propane, n-butane, n-pentane and n-hexane was used for control of linearity.

Rock-related concentrations (in µl/kg) for compounds having a concentration of less than 0.2 ppm (µl/l) in the analysed gas are not reported, as this corresponds to an area of about 0.08, which is the lowest reliable area in the gas chromatograms.

Table 2.3 Results from analyses of 1000 ppm standard on old column (peak area)

	C1	C2	C3	iC4	nC4	nC5	nC6
Average peak area	73.1	141.6	205.1	285.7	291.7	325.8	360.0
Stdev.	0.2	0.1	1.0	1.1	1.2	2.8	4.5
Stdev. (% of average)	0.3	0.1	0.5	0.4	0.4	0.9	1.2
n	4	4	4	4	4	4	4

Table 2.4 Results from analyses of 1000 ppm standard on new column (peak area)

	C1	C2	C3	iC4	nC4	nC5	nC6
Average peak area	67.7	131.9	191.6	267.6	273.5	312.6	352.8
Stdev.	0.4	0.7	1.0	1.7	2.0	2.9	5.9
Stdev. (% of average)	0.6	0.6	0.5	0.6	0.7	0.9	1.7
n	9	9	9	9	9	9	9

2.6 Concentrations and ratios

The yields of hydrocarbons (µl/kg dry rock) in headspace (H) and occluded (O) gas and the sum of H + O are given in Table 4.3, while the hydrocarbon composition (volume %) is given in Table 4.4. Selected summary data and peak ratios are calculated and reported in Table 4.5. Abbreviations used in Table 4.5 are explained in Table 2.5.

As coelution of 3-EC5 and 2,2,4-TMC5 with t-1,2-DMCyC5 and of c-1,2-DMCyC5 with MCyC6 cannot be avoided at the chosen experimental conditions, only some of the Mango ratios can be calculated (see tables).

Table 2.5 Explanations of the variables listed in Table 4.5.

Abbreviation	Explanation
Hydrocarbon yields for selected C-number ranges	
CncC1	Concentration of C1 (µl/kg dry rock)
CncC2C4	Concentration of C2 through n-C4 (µl/kg dry rock)
CncC5C9	Concentration of C5 through n-C9, i.e. all peaks eluting after n-C4 (µl/kg dry rock)
CncC1C9	Sum of these concentrations
Hydrocarbon composition for selected C-number ranges	
PctC1	Fraction of C1 (% volume of all C1-C9 HC)
PctC2C4	Fraction of C2 through n-C4 (% volume of all C1-C9 HC)
PctC5C9	Fraction of C5 through n-C9, i.e. all peaks eluting after n-C4 (% volume of all C1-C9 HC).
PctC1C9	Sum of these fractions (= 100 vol %)

Table 2.5 Continued

Abbreviation	Explanation
Wetness and i-C4/n-C4 ratio	
Wetness	100* (Sum C2 to n-C4) / (Sum C1 to n-C4) (volume %)
Ratic4nc4	Volume ratio i-C4 / n-C4
Composition of C7 hydrocarbons by compound class	
PctnC7	Fraction of n-alkanes in n-C7 range (volume % of all C7 compounds)
PctIsoC7	Fraction of iso-alkanes in n-C7 range (volume % of all C7 compounds)
PctCycC7	Fraction of cycloalkanes in n-C7 range (volume % of all C7 compounds)
PctAroC7	Fraction of aromatics in n-C7 range (volume % of all C7 compounds)
PctSumC7	Sum of these fractions (= 100 vol %)
Thompson ratios (mass ratios), assessed property in brackets	
Thompson_A	A = Benzene / n-Hexane [Aromaticity (fractionation)]
Thompson_B	B = Toluene / n-Heptane [Aromaticity (fractionation)]
Thompson_X	X = Xylene (m & p) / n-Octane [Aromaticity (fractionation)]
Thompson_C	C = (n-Hexane + n-Heptane) / (Cyclohexane + Methylcyclohexane) [Paraffinicity (maturity)]
Thompson_I	I = Isoheptane value = (Methylhexanes (2- & 3-)) / (Dimethylcyclopentanes (c1,3-, t1,3-, & t1,2-)) [Paraffinicity (maturity)]
Thompson_F	F = n-Heptane / Methylcyclohexane [Paraffinicity (maturity)]
Thompson_H	H = Heptane Value = 100 * n-Heptane / (Sum Cyclohexane through Methylcyclohexane, excluding cis-1,2-Dimethylcyclopentane) [Paraffinicity (maturity)]
Thompson_R	R = n-Heptane / 2-Methylhexane [Normality (branching)]
Thompson_U	U = Cyclohexane / 2-Methylhexane [Normality (branching)]
Mango ratios (mass ratios)	
Mango_P1	P1 = n-C7 (mass% of sum C7 HC) [first parents in SS kinetic scheme], Mango 1994
Mango_P2	P2 = 2-MC6 + 3-MC6 (mass% of sum C7 HC) [second parent in SS kinetic scheme], Mango 1994
Mango_P3	P3 = 3-EC5 + 3,3-DMC5 + 2,3-DMC5 + 2,4-DMC5 + 2,2-DMC5 + 2,2,3-TMC4 (mass% of sum C7 HC) [daughter isoalkane product of P2], Mango 1994 [Remark 1]
Mango_N15	N15 = ECyC5 + c-1,2-DMCyC5 + t-1,2-DMCyC5 (mass% of sum C7 HC) [Daughter cyclopentane products of P2], Mango 1994 [Remark 2]
Mango_N16	N16 = MCyC6 + TOLUENE (mass% of sum C7 HC) [Daughter cyclohexane products of P1], Mango 1994
Mango_N2	N2 = 1,1-DMCyC5 + c-1,3-DMCyC5 + t-1,3-DMCyC5 (mass% of sum C7 HC) [Daughter cyclopentane products of P2], Mango 1994 [Remark 3]
Mango_K1	K1 = (2-MC6 + 2,3-DMC5) / (3-MC6 + 2,4-DMC5), Mango 1987 in Mango 1994
Mango_K2	K2 = P3 / (P2 + N2) = (3-EC5 + 2,3-DMC5 + 2,4-DMC5 + 2,2-DMC5 + 2,2,3-TMC42) / (2-MC6 + 3-MC6 + 1,1-DMCyC5 + c-1,3-DMCyC5 + t-1,3-DMCyC5) (Mango 1990 in Mango 1994)
Mango_N15N16	N15/N16 = k15/k16 [a ratio of P1 daughters], Mango 1994
Mango_P3N2	P3/N2 = k23/k25 [a ratio of P2 daughters], Mango 1994

Remarks on Mango ratios

Remark 1 The 2,2,3-TMC4 peak is consistently called "2,3,3-TMC4" in the Mango papers, but this is probably a mistyping, as 2,3,3-TMC4 is normally not identified.

Remark 2 Actually N_1^5, where 1 means the first daughter generation and 5 stands for the parent cyclopentane.

Remark 3 Analogous to N15.

Coelution of compounds

CyC5 contains coeluting 2,3-DMC4.

t-1,2-DMCyC5 contains coeluting 3-EC5 and 2,2,4-TMC5. The Mango ratios P3 and N15 can therefore not be calculated. The Thompson ratios H and I may be slightly affected.

MCyC6 contains coeluting c-1,2-DMCyC5. The Mango ratios N15 and N16 can therefore not be calculated. The Thompson ratios C, F and H may be slightly affected.

Toluene coelutes with 2,3,3-TMC5 and n-C8 contains an unknown coeluting compound. The Thompson ratios B, H and X may be slightly affected.

References

Mango, F.D. (1987): An invariance in the isoheptanes of petroleum. Science 237, 514-517.

Mango, F.D. (1990): The origin of light hydrocarbons in petroleum: A kinetic test of the steady-state catalytic hypothesis. Geochimica et Cosmochimica Acta 54, 1315-1323.

Mango, F.D. (1994): The origin of light hydrocarbons in petroleum: Ring preference in the closure of carbocyclic rings. Geochimica et Cosmochimica Acta 58, 895-901.

Thompson, K.F.M. (1987): Fractionated aromatic petroleums and the generation of gas-condensates. Organic Geochemistry 11, 573-590.

2.7 Water content

The water content of the cuttings was determined by weighing the fractions before and after drying at 35 °C for at least 24 hours. The dry weight of the rock used for occluded gas analysis was determined using the wet weight of this rock and the water content of the remaining 1-4 mm fraction. Water contents for the three individual grain size fractions are listed in Table 4.2.

If all material from the 1-4 mm fraction had been used for occluded gas analysis, the water content of the >125 mm fraction was calculated using a water content typical for the respective depth interval.

3. Comments on samples and analytical data

The wet cutting samples were received in pressure-lid cans of 1 l volume at ambient temperature. Secondary modification of the gas composition by microbial activity can, therefore, not be completely ruled out.

Sample descriptions are listed in Table 4.1. The lignite and black coal in the three deepest samples, tentatively considered as being a mud additive, may have contributed to the high gas contents in these samples.

Note the remarks in Table 2.5 on the possible effects of coelution on the various peak ratios.

4. Results

Table 4.1
Sample description

Table 4.1 Sample description. Lithologies in order of decreasing abundance.

Sample ID	Btm Depth (m RKB)	Lithology (numbers represent roughly estimated percentages)	Gas volume headspace (ml)	Gas volume occluded (ml)	Rock weight total sample dry (g)	Rock weight occluded sample dry (g)
H6437	1726	60 CLYST (sl calc/dol, sl slty, ltgy); 30 CLYST (sl calc/dol, sl slty, mgy); 10 SST (vfgr, ltgy); tr PY; tr wood (ADD)	390	29.5	182.0	18.5
H6438	1735	95 CLYST (sl calc/dol, mgy); 5 LST (wh-ye); tr PY, tr ADD (wood)	228	23.6	229.9	16.7
H6439	1744	95 CLYST (sl calc/dol, ltgy); 3 CLYST (sl calc/dol, mgy); 1 LST (wh-ye); 1 SST	310	29.0	231.5	16.9
H6440	1791	99 CLYST (sl calc/dol, ltgy-gnish); 1 CLYST (sl calc/dol, dkgy); tr LST (ltbn); tr SST; tr PY	402	27.1	211.6	16.6
H6441	1797	85 CLYST (sl calc/dol, ltgy-gnish); 12 CLYST (sl calc/dol, mgy-red); 2 LST (ltbn); 1 SST; tr PY	535	33.9	152.9	16.5
H6442	1860	>4 mm: 50 CLYST (sl calc/dol, ltgy-gnish); 50 CLYST (sl calc/dol, mgy); tr MUD; (no 1 - 4 mm fraction available for description)	505	33.5	106.9	6.8
H6443	1905	40 CLYST (sl calc/dol, ltgy-gnish); 40 CLYST (sl calc/dol, mgy); 9 CLYST (sl calc/dol, mgy); 1 SST (py)	475	32.0	169.1	18.4
H6444	1914	25 CLYST (sl calc/dol, ltgy-gnish); 25 CLYST (sl calc/dol, mgy); 20 CLYST (sl calc/dol, mgy); 15 SST (cc cmt, partly glauc and pyr); 15 LST	528	26.0	169.8	17.3
H6445	1923	80 CLYST (sl calc/dol, ltgy-gn-dkgy); 20 SST (cc cmt); tr ADD (wood)	520	35.0	188.1	17.7
H6446	2058	35 CLYST (sl calc/dol, lt-mgy-gnish); 35 ADD (lignite and black coal); 15 SST (cc cmt); 15 LST (white, ADD?)	570	25.7	89.0	16.5
H6447	2103	35 CLYST (sl calc/dol, mgy-red); 25 CLYST (sl calc/dol, ltgy-gnish); 25 ADD (lignite); 5 PY; 5 LST (white, ADD?)	324	31.2	70.9	16.8
H6448	2112	>4 mm: 73 CLYST (ltgy-gnish); 23 CLYST + SLST (dkgy); 23 ADD (lignite); 2 LST (red); (no 1 - 4 mm fraction available for description)	384	33.4	54.8	16.1

Key: CLYST = claystone, SLST = siltstone, SST = sandstone, LST = limestone, DOL/dol = dolomite/dolomitic, CC = calcite, calc = calcareous, PY = pyrite, ADD = mud additive, slty = silty, cmt = cemented, tr = trace, gy = grey, rd = red, gn = green, wh = white, ye = yellow, bn = brown, dk = dark, m = medium, lt = light, v = very, fgr = fine-grained, sl = slightly.

Table 4.2
Water contents of different grain size fractions

Table 4.2 Water contents of different grain size fractions.

Sample ID	Btm Depth (m)	Water content >4 mm fraction (wt% of wet fraction)	Water content 4-1 mm fraction (wt% of wet fraction	Water content 1-0.125 mm fraction (wt% of wet fraction)	Water content >0.125 mm (wt% of wet fraction)
H6437	1726	16.8	19.3	37.3	22.6
H6438	1735	20.1	22.3	35.4	26.0
H6439	1744	16.1	19.8	30.8	20.1
H6440	1791	16.4	18.2	31.9	21.2
H6441	1797	17.7	19.4	32.2	23.0
H6442	1860	20.9	0.0	20.2	20.0
H6443	1905	16.5	16.9	32.1	21.8
H6444	1914	17.6	18.1	25.0	20.4
H6445	1923	17.7	17.4	21.9	19.5
H6446	2058	17.5	17.7	23.2	21.0
H6447	2103	17.7	19.4	24.9	20.6
H6448	2112	15.3	0.0	21.5	18.5

A water content of 0.0 indicates that no material was available for water content determination (see comment in Chapter 2.7).

Table 4.3
Yield of hydrocarbons in headspace and occluded gas
(µl / kg dry rock)

Table 4.3 Yield of hydrocarbons in headspace and occluded gas (µl/kg dry rock).

Sample-ID	H6437	H6437	H6437	H6438	H6438	H6438	H6439	H6439	H6439
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1726	1726	1726	1735	1735	1735	1744	1744	1744
Compound									
C1	17977	150	18127	4867	117	4984	18389	115	18504
C2	8091	80	8172	2753	82	2836	6943	75	7018
C3	8307	637	8945	2414	295	2709	6337	511	6848
RI=316	0	0	0	0	2	2	0	2	2
iC4	2381	692	3073	785	280	1066	1739	545	2284
C4ene	8	2	10	4	6	11	6	3	9
nC4	3521	1442	4963	1099	574	1673	2589	1170	3758
2,2-DMC3	31	18	49	12	8	20	22	14	37
RI=418	0	0	0	0	1	1	0	0	0
RI=434	0	0	0	0	0	0	0	0	0
iC5	1210	1211	2421	453	511	964	867	1022	1888
RI=486 (C5ene)	2	0	2	1	1	2	1	0	1
RI=493 (C5ene)	0	0	0	0	1	1	0	0	0
nC5	1269	1594	2863	455	667	1122	906	1377	2283
RI=529	0	0	0	0	1	1	0	1	1
2,2-DMC4	42	70	112	17	30	47	30	61	90
CyC5 + 2,3-DMC4	368	358	727	124	150	274	255	320	575
2-MC5	313	672	985	125	306	430	219	614	833
RI=569	2	0	2	1	0	1	2	0	2
3-MC5	205	417	622	80	185	266	143	384	527
nC6	375	851	1226	146	387	533	262	819	1081
2,2-DMC5	15	43	59	5	17	22	11	40	51
MCyC5	625	838	1463	203	316	520	427	789	1215
2,4-DMC5	31	87	117	11	36	47	21	82	103
2,2,3-TMC4	4	9	13	1	4	6	3	8	11
Benzene	19	3	22	7	2	9	12	3	16
3,3-DMC5	11	27	38	4	11	14	7	26	34
CyC6	957	1149	2106	299	427	726	637	1113	1750
2-MC6	60	170	230	22	78	99	41	177	218
2,3-DMC5	51	132	183	18	56	73	34	131	165
1,1-DMCyC5	57	108	165	20	45	65	38	105	143
3-MC6	83	227	310	30	103	133	56	235	291
c-1,3-DMCyC5	73	152	225	23	58	82	52	152	204
t-1,3-DMCyC5	78	167	245	25	65	90	60	167	227
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	114	235	349	36	91	127	77	236	313
nC7	91	247	338	34	115	149	63	278	341
MCyC6 + c-1,2-DMCyC5	827	1509	2336	222	502	724	538	1564	2102
2,2-DMC6 + 1,1,3-TMCyC5	23	56	79	7	23	31	15	59	74
2,5-DMC6 + 2,2,3-TMC5	6	17	22	2	8	9	4	19	23
2,4-DMC6	36	82	117	11	32	43	23	89	113
3,3-DMC6 + t-1,c-2,4-TMCyC5	26	66	92	7	24	30	17	71	88
t-1,c-2,3-TMCyC5	18	43	61	5	16	21	11	47	59
2,3,4-TMC5	3	8	11	1	4	5	2	9	11
Toluene + 2,3,3-TMC5	21	11	31	11	7	18	13	12	25
2,3-DMC6	11	28	39	2	9	11	7	32	39
2-M,3-EC5	3	7	9	1	3	4	2	8	9
2-MC7	29	75	104	9	31	40	19	89	109
4-MC7 + 3-M,3-EC5	10	26	36	3	10	13	6	31	38
3,4-DMC6	6	14	19	1	5	6	3	16	19
3-MC7 + c-1,t-2,3-TMCyC5	28	72	101	6	24	30	18	86	104
RI=781 (DMCyC6)	76	166	242	18	55	73	48	188	236
RI=783 (DMCyC6)	34	72	105	8	24	32	21	81	102
2,2,5-TMC6	1	2	3	0	1	1	0	2	3
RI=790	21	43	64	6	17	23	13	49	62
RI=793	12	27	39	4	11	14	8	31	39
RI=796	4	7	11	1	3	4	2	8	10
nC8	56	122	178	14	44	58	36	149	184
RI=804	3	7	9	1	2	3	2	8	10
RI=807	17	34	51	4	13	17	10	40	50
RI=814	2	5	8	1	2	3	2	7	8
2,3,5-TMC6 + c-1,2-EMCyC5	1	3	5	0	1	1	1	4	5
RI=821	4	8	12	1	2	3	2	10	12
RI=825	5	11	17	1	4	5	3	15	18
RI=831	7	16	22	1	6	7	5	21	25
RI=833/834	9	18	28	2	7	9	6	22	28
RI=837	68	132	200	14	40	54	42	158	200
RI=843	19	41	61	4	16	20	12	52	64
RI=846	5	11	17	1	4	5	3	14	17
RI=849	2	5	7	0	2	2	1	6	7
RI=852	1	2	3	0	1	1	1	3	4
E-Benzene	7	9	17	3	4	6	5	11	16
RI=860	15	29	44	2	7	9	9	39	48
m+p-Xylene	15	14	29	7	6	13	9	18	28
RI=867	7	12	19	1	3	4	4	17	22
RI=870	0	1	1	0	0	1	0	1	2
4-MC8 + 2-MC8	12	21	33	3	6	9	8	27	35
RI=877/879	2	3	5	1	1	2	1	5	6
RI=883	5	9	14	1	3	5	3	12	15
o-Xylene	5	4	8	3	2	4	3	5	8
RI=890	8	15	22	2	5	6	5	19	24
RI=893	9	18	28	1	4	6	6	24	30
RI=896	6	11	17	1	3	4	4	15	18
nC9	8	14	21	1	4	6	5	19	24

Table 4.3 (cont'd.): Yield of hydrocarbons in headspace and occluded gas (µl/kg dry rock).

Sample-ID	H6440	H6440	H6440	H6441	H6441	H6441	H6442	H6442	H6442
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1791	1791	1791	1797	1797	1797	1860	1860	1860
Compound									
C1	7234	142	7376	6260	145	6404	1138	311	1449
C2	1282	44	1326	4103	28	4131	320	103	423
C3	810	30	840	2773	36	2809	293	59	352
RI=316	0	1	1	0	1	1	0	4	4
iC4	681	18	699	2228	80	2308	174	18	192
C4ene	6	8	14	10	3	13	9	22	31
nC4	223	18	241	610	34	644	158	31	189
2,2-DMC3	9	1	11	27	2	29	4	3	7
RI=418	0	1	1	0	0	0	0	2	2
RI=434	1	0	1	1	0	1	0	0	0
iC5	178	23	201	440	50	490	88	49	137
RI=486 (C5ene)	3	1	4	0	0	0	0	4	4
RI=493 (C5ene)	0	1	1	0	0	0	0	4	4
nC5	86	25	111	211	33	243	75	87	162
RI=529	0	1	1	0	1	1	0	4	4
2,2-DMC4	22	3	26	56	9	65	5	5	10
CyC5 + 2,3-DMC4	160	19	178	443	59	503	43	26	69
2-MC5	58	19	76	136	35	172	20	48	68
RI=569	1	1	2	0	1	1	0	0	0
3-MC5	46	13	60	111	27	138	15	32	47
nC6	40	23	64	97	36	133	17	63	80
2,2-DMC5	11	3	14	26	7	33	1	5	6
MCyC5	331	59	390	826	167	992	77	76	153
2,4-DMC5	23	6	28	56	15	71	3	11	14
2,2,3-TMC4	3	1	3	7	2	9	0	1	1
Benzene	6	0	6	15	1	16	4	1	5
3,3-DMC5	8	2	10	20	5	25	1	3	4
CyC6	505	88	593	1259	244	1503	123	104	227
2-MC6	17	9	25	42	18	59	2	20	22
2,3-DMC5	37	11	48	92	27	119	5	18	24
1,1-DMCyC5	38	9	47	95	24	118	7	13	21
3-MC6	27	13	40	69	27	96	5	33	37
c-1,3-DMCyC5	51	15	66	129	37	166	8	19	28
t-1,3-DMCyC5	54	16	70	136	40	177	9	23	32
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	82	24	105	205	60	265	14	32	46
nC7	14	14	27	33	26	60	3	36	39
MCyC6 + c-1,2-DMCyC5	571	184	755	1400	432	1832	86	178	264
2,2-DMC6 + 1,1,3-TMCyC5	19	6	25	48	15	62	2	10	13
2,5-DMC6 + 2,2,3-TMC5	3	1	5	8	3	11	0	4	4
2,4-DMC6	21	9	30	55	18	74	4	16	20
3,3-DMC6 + t-1,c-2,4-TMCyC5	23	9	32	57	18	76	3	13	15
t-1,c-2,3-TMCyC5	15	6	22	39	13	52	2	9	11
2,3,4-TMC5	3	1	4	7	2	9	0	2	2
Toluene + 2,3,3-TMC5	4	1	5	12	2	15	6	3	9
2,3-DMC6	10	4	14	24	8	32	1	6	7
2-M,3-EC5	2	1	3	6	2	8	0	2	2
2-MC7	11	7	18	26	14	40	2	18	20
4-MC7 + 3-M,3-EC5	4	3	7	10	5	15	0	7	7
3,4-DMC6	5	2	7	13	4	17	0	3	3
3-MC7 + c-1,t-2,3-TMCyC5	15	9	23	36	16	52	2	15	18
RI=781 (DMCyC6)	67	31	98	168	61	228	9	37	46
RI=783 (DMCyC6)	29	13	43	73	27	100	4	16	20
2,2,5-TMC6	1	0	1	2	1	3	0	0	0
RI=790	17	8	24	43	16	58	3	10	13
RI=793	10	5	15	27	10	37	2	8	9
RI=796	3	1	4	8	3	11	1	2	3
nC8	33	20	52	81	38	119	5	32	37
RI=804	3	1	4	7	2	9	0	2	2
RI=807	13	7	19	31	13	44	2	9	11
RI=814	2	1	3	5	2	8	0	2	2
2,3,5-TMC6 + c-1,2-EMCyC5	1	1	2	4	1	5	0	1	1
RI=821	4	2	6	10	3	13	0	3	3
RI=825	5	2	7	13	4	16	0	4	4
RI=831	4	3	7	10	4	14	0	7	7
RI=833/834	7	4	11	17	7	24	0	5	5
RI=837	59	34	93	150	58	208	7	36	43
RI=843	19	10	29	49	17	66	2	16	18
RI=846	5	3	8	13	5	18	1	4	5
RI=849	2	1	3	5	2	7	0	2	2
RI=852	1	1	2	3	1	4	0	0	0
E-Benzene	4	2	6	11	4	15	2	4	6
RI=860	17	9	25	43	13	56	2	10	12
m+p-Xylene	7	4	11	20	5	25	4	6	10
RI=867	2	2	3	3	2	5	0	4	4
RI=870	0	0	1	1	1	2	0	0	0
4-MC8 + 2-MC8	9	5	14	21	8	29	1	7	8
RI=877/879	2	0	2	4	2	6	0	2	2
RI=883	5	4	9	13	5	18	1	4	6
o-Xylene	2	1	3	5	1	6	2	2	4
RI=890	8	5	13	19	7	27	1	6	8
RI=893	10	7	17	27	9	36	1	7	8
RI=896	6	4	10	16	6	22	1	4	5
nC9	4	3	7	10	5	16	1	6	8

Table 4.3 (cont'd.): Yield of hydrocarbons in headspace and occluded gas (µl/kg dry rock).

Sample-ID	H6443	H6443	H6443	H6444	H6444	H6444	H6445	H6445	H6445
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1905	1905	1905	1914	1914	1914	1923	1923	1923
Compound									
C1	9015	95	9110	4100	94	4194	3002	125	3127
C2	1977	27	2004	1093	25	1118	702	27	730
C3	962	57	1019	631	31	662	417	29	446
RI=316	0	1	1	0	1	1	0	1	1
iC4	364	64	429	266	30	297	168	24	193
C4ene	9	4	12	10	5	14	8	5	13
nC4	173	54	227	145	29	174	121	30	151
2,2-DMC3	5	2	7	4	1	6	3	2	5
RI=418	0	0	0	0	1	1	0	0	0
RI=434	0	0	0	1	0	1	1	0	1
iC5	66	40	106	62	26	88	56	28	84
RI=486 (C5ene)	2	0	3	0	1	1	2	1	2
RI=493 (C5ene)	0	1	1	0	1	1	0	1	1
nC5	28	27	55	34	20	53	39	29	68
RI=529	0	1	1	0	0	0	0	1	1
2,2-DMC4	5	4	9	5	2	7	3	2	6
CyC5 + 2,3-DMC4	60	34	94	50	20	70	34	17	50
2-MC5	13	17	30	14	13	27	13	16	29
RI=569	0	1	1	0	0	0	0	1	1
3-MC5	11	13	24	11	10	21	10	11	21
nC6	7	12	19	9	10	19	10	16	26
2,2-DMC5	1	1	3	1	1	2	1	1	2
MCyC5	84	72	157	73	46	120	49	37	86
2,4-DMC5	2	4	6	2	3	5	2	3	5
2,2,3-TMC4	1	1	1	1	1	1	0	1	1
Benzene	15	3	17	12	1	13	9	1	10
3,3-DMC5	1	1	2	1	1	2	1	1	1
CyC6	135	98	233	117	63	180	79	50	129
2-MC6	2	4	6	2	3	5	2	4	6
2,3-DMC5	5	7	12	4	5	10	4	6	9
1,1-DMCyC5	7	7	14	6	5	12	5	5	10
3-MC6	4	7	11	4	6	10	4	8	12
c-1,3-DMCyC5	8	11	19	8	8	15	6	7	12
t-1,3-DMCyC5	9	11	20	8	8	16	6	8	14
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	14	17	31	13	13	25	9	11	21
nC7	2	5	7	2	5	7	2	7	9
MCyC6 + c-1,2-DMCyC5	77	91	168	71	65	136	50	57	106
2,2-DMC6 + 1,1,3-TMCyC5	2	3	5	2	2	4	2	3	4
2,5-DMC6 + 2,2,3-TMC5	0	1	1	0	0	0	0	1	1
2,4-DMC6	3	5	8	3	4	7	2	4	7
3,3-DMC6 + t-1,c-2,4-TMCyC5	2	3	6	2	3	5	1	3	5
t-1,c-2,3-TMCyC5	2	4	6	2	3	5	1	3	4
2,3,4-TMC5	0	1	1	0	0	0	0	1	1
Toluene + 2,3,3-TMC5	7	3	10	8	2	9	7	2	9
2,3-DMC6	1	1	2	0	1	1	1	1	2
2-M,3-EC5	0	0	0	0	0	0	0	0	0
2-MC7	2	3	5	2	3	4	2	4	5
4-MC7 + 3-M,3-EC5	0	1	1	0	1	1	0	1	1
3,4-DMC6	0	1	1	0	1	1	0	1	1
3-MC7 + c-1,t-2,3-TMCyC5	1	2	3	1	2	3	1	3	4
RI=781 (DMCyC6)	6	9	14	5	7	12	5	8	13
RI=783 (DMCyC6)	3	4	6	3	3	6	2	4	6
2,2,5-TMC6	0	0	0	0	0	0	0	0	0
RI=790	2	3	6	2	2	5	2	3	5
RI=793	2	3	5	2	2	4	2	2	4
RI=796	0	1	1	0	1	1	1	1	1
nC8	4	6	10	4	5	9	3	7	10
RI=804	0	0	0	0	0	0	0	1	1
RI=807	2	2	4	2	2	4	1	2	4
RI=814	0	1	1	0	1	1	0	1	1
2,3,5-TMC6 + c-1,2-EMCyC5	0	0	0	0	0	0	0	0	0
RI=821	0	0	0	0	0	0	0	1	1
RI=825	1	1	2	0	1	1	0	1	1
RI=831	0	1	1	0	1	1	0	1	1
RI=833/834	2	1	3	1	1	2	1	1	2
RI=837	4	6	11	4	5	10	4	7	11
RI=843	2	3	5	2	3	4	2	3	5
RI=846	0	1	1	0	1	1	0	1	1
RI=849	0	1	1	0	0	0	0	0	0
RI=852	0	0	0	0	0	0	0	0	0
E-Benzene	1	2	3	1	1	3	1	1	3
RI=860	1	2	3	1	1	2	1	2	3
m+p-Xylene	1	1	2	2	1	2	2	1	3
RI=867	0	0	0	0	0	0	0	1	1
RI=870	0	0	0	0	0	0	0	0	0
4-MC8 + 2-MC8	1	1	3	1	1	2	1	1	2
RI=877/879	0	1	1	0	1	1	0	1	1
RI=883	1	2	3	1	1	2	1	1	2
o-Xylene	1	1	1	1	0	1	1	1	2
RI=890	1	2	3	1	1	2	1	2	3
RI=893	1	1	1	1	1	1	1	1	2
RI=896	1	1	1	1	1	1	1	1	2
nC9	1	2	3	1	1	3	1	2	3

Table 4.3 (cont'd.): Yield of hydrocarbons in headspace and occluded gas (µl/kg dry rock).

Sample-ID	H6446	H6446	H6446	H6447	H6447	H6447	H6448	H6448	H6448
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	2058	2058	2058	2103	2103	2103	2112	2112	2112
Compound									
C1	19812	192	20004	50430	411	50841	35323	254	35577
C2	14687	479	15166	24337	2555	26892	14702	799	15501
C3	24149	3817	27966	29110	10910	40020	16173	4209	20382
RI=316	0	0	0	0	0	0	0	0	0
iC4	4256	1616	5872	4092	2410	6502	2129	1008	3138
C4ene	34	8	42	12	6	19	17	5	22
nC4	9701	4617	14318	7739	6386	14125	3799	2655	6454
2,2-DMC3	52	32	83	40	31	71	18	13	30
RI=418	0	2	2	0	0	0	0	0	0
RI=434	0	0	0	0	0	0	0	0	0
iC5	2545	2133	4678	1599	1801	3400	801	798	1599
RI=486 (C5ene)	2	2	4	0	1	1	0	0	0
RI=493 (C5ene)	0	1	1	0	1	1	0	0	0
nC5	3276	3001	6277	1528	2057	3585	682	871	1553
RI=529	0	0	0	0	0	0	0	0	0
2,2-DMC4	45	50	95	16	21	37	7	9	16
CyC5 + 2,3-DMC4	419	257	676	246	207	453	144	109	253
2-MC5	586	733	1319	200	338	538	101	172	273
RI=569	0	2	2	3	2	5	3	2	5
3-MC5	363	422	785	132	206	337	69	107	176
nC6	950	1123	2073	235	386	621	99	181	280
2,2-DMC5	10	15	25	2	4	6	0	2	2
MCyC5	738	495	1233	438	440	878	295	270	565
2,4-DMC5	21	30	51	7	12	19	4	7	11
2,2,3-TMC4	3	4	6	1	1	2	0	1	1
Benzene	87	10	97	43	12	56	38	9	46
3,3-DMC5	7	9	17	2	3	4	0	1	1
CyC6	1026	567	1592	392	310	702	188	147	335
2-MC6	90	126	216	22	40	62	9	18	27
2,3-DMC5	37	46	83	13	23	36	8	14	22
1,1-DMCyC5	49	43	93	13	15	28	6	8	14
3-MC6	106	140	246	29	50	80	14	26	39
c-1,3-DMCyC5	71	64	136	52	74	125	41	52	93
t-1,3-DMCyC5	76	71	147	51	72	123	40	50	90
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	112	100	212	85	121	206	68	86	154
nC7	223	270	493	45	67	112	18	31	49
MCyC6 + c-1,2-DMCyC5	785	551	1336	250	260	510	151	158	309
2,2-DMC6 + 1,1,3-TMCyC5	13	15	28	5	8	13	3	5	8
2,5-DMC6 + 2,2,3-TMC5	4	6	10	1	2	3	0	1	1
2,4-DMC6	38	32	70	22	27	49	17	19	36
3,3-DMC6 + t-1,c-2,4-TMCyC5	19	23	42	16	30	46	14	23	36
t-1,c-2,3-TMCyC5	15	17	32	14	26	40	12	20	32
2,3,4-TMC5	2	2	4	0	1	1	0	1	1
Toluene + 2,3,3-TMC5	403	55	458	137	38	175	87	21	108
2,3-DMC6	5	6	11	1	2	3	0	1	1
2-M,3-EC5	2	2	4	0	1	1	0	1	1
2-MC7	33	42	75	7	12	19	5	9	15
4-MC7 + 3-M,3-EC5	9	12	20	1	2	3	0	2	2
3,4-DMC6	3	4	6	0	1	1	0	1	1
3-MC7 + c-1,t-2,3-TMCyC5	23	31	54	4	8	12	4	6	10
RI=781 (DMCyC6)	54	49	103	22	29	51	16	21	36
RI=783 (DMCyC6)	24	20	45	9	12	21	7	9	15
2,2,5-TMC6	0	0	0	0	0	0	0	0	0
RI=790	17	14	31	8	11	19	6	8	14
RI=793	17	15	32	14	21	35	13	16	29
RI=796	3	2	5	1	1	2	0	1	1
nC8	68	65	134	16	19	35	12	15	27
RI=804	2	3	5	2	4	6	2	3	5
RI=807	16	12	28	7	8	15	6	6	12
RI=814	2	2	4	2	2	4	2	2	4
2,3,5-TMC6 + c-1,2-EMCyC5	0	1	1	0	0	0	0	0	0
RI=821	2	1	3	0	1	1	0	1	1
RI=825	4	3	7	3	3	6	3	3	5
RI=831	4	4	8	0	2	2	0	2	2
RI=833/834	12	9	21	7	8	14	6	5	11
RI=837	47	34	80	14	15	28	9	10	19
RI=843	11	11	23	4	6	10	3	5	9
RI=846	4	4	8	2	4	7	3	3	7
RI=849	1	2	3	1	2	3	0	2	2
RI=852	0	0	0	0	0	0	0	0	0
E-Benzene	41	9	50	15	8	22	11	5	16
RI=860	5	6	11	2	3	6	2	3	5
m+p-Xylene	209	28	238	53	13	66	31	7	38
RI=867	4	2	6	0	1	1	0	1	1
RI=870	1	1	3	2	2	4	1	2	3
4-MC8 + 2-MC8	7	4	12	2	2	4	2	1	3
RI=877/879	1	2	3	1	2	3	0	2	2
RI=883	4	3	7	2	2	4	2	2	4
o-Xylene	49	7	56	13	4	16	8	2	10
RI=890	5	5	10	2	3	6	3	3	6
RI=893	5	5	10	1	2	3	2	1	3
RI=896	4	4	8	2	3	5	3	2	5
nC9	9	3	12	2	1	3	0	1	1

Table 4.4
Composition of hydrocarbons in headspace and occluded gas
(volume %)

Table 4.4 Composition of hydrocarbons in headspace and occluded gas (volume %).

Sample-ID	H6437	H6437	H6437	H6438	H6438	H6438	H6439	H6439	H6439
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1726.0	1726.0	1726.0	1735.0	1735.0	1735.0	1744.0	1744.0	1744.0
Compound									
C1	37.6	1.0	29.0	33.6	1.9	24.3	44.6	0.8	33.6
C2	16.9	0.5	13.1	19.0	1.4	13.8	16.8	0.5	12.8
C3	17.4	4.3	14.3	16.7	4.9	13.2	15.4	3.7	12.5
RI=316	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC4	5.0	4.7	4.9	5.4	4.7	5.2	4.2	4.0	4.2
C4ene	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
nC4	7.4	9.8	7.9	7.6	9.5	8.2	6.3	8.5	6.8
2,2-DMC3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
RI=418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=434	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC5	2.5	8.2	3.9	3.1	8.5	4.7	2.1	7.4	3.4
RI=486 (C5ene)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=493 (C5ene)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nC5	2.7	10.8	4.6	3.1	11.1	5.5	2.2	10.0	4.2
RI=529	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,2-DMC4	0.1	0.5	0.2	0.1	0.5	0.2	0.1	0.4	0.2
CyC5 + 2,3-DMC4	0.8	2.4	1.2	0.9	2.5	1.3	0.6	2.3	1.0
2-MC5	0.7	4.6	1.6	0.9	5.1	2.1	0.5	4.5	1.5
RI=569	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-MC5	0.4	2.8	1.0	0.6	3.1	1.3	0.3	2.8	1.0
nC6	0.8	5.8	2.0	1.0	6.4	2.6	0.6	5.9	2.0
2,2-DMC5	0.0	0.3	0.1	0.0	0.3	0.1	0.0	0.3	0.1
MCyC5	1.3	5.7	2.3	1.4	5.2	2.5	1.0	5.7	2.2
2,4-DMC5	0.1	0.6	0.2	0.1	0.6	0.2	0.1	0.6	0.2
2,2,3-TMC4	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Benzene	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3,3-DMC5	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.2	0.1
CyC6	2.0	7.8	3.4	2.1	7.1	3.5	1.5	8.1	3.2
2-MC6	0.1	1.2	0.4	0.2	1.3	0.5	0.1	1.3	0.4
2,3-DMC5	0.1	0.9	0.3	0.1	0.9	0.4	0.1	0.9	0.3
1,1-DMCyC5	0.1	0.7	0.3	0.1	0.7	0.3	0.1	0.8	0.3
3-MC6	0.2	1.5	0.5	0.2	1.7	0.7	0.1	1.7	0.5
c-1,3-DMCyC5	0.2	1.0	0.4	0.2	1.0	0.4	0.1	1.1	0.4
t-1,3-DMCyC5	0.2	1.1	0.4	0.2	1.1	0.4	0.1	1.2	0.4
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	0.2	1.6	0.6	0.3	1.5	0.6	0.2	1.7	0.6
nC7	0.2	1.7	0.5	0.2	1.9	0.7	0.2	2.0	0.6
MCyC6 + c-1,2-DMCyC5	1.7	10.3	3.7	1.5	8.3	3.5	1.3	11.3	3.8
2,2-DMC6 + 1,1,3-TMCyC5	0.0	0.4	0.1	0.0	0.4	0.1	0.0	0.4	0.1
2,5-DMC6 + 2,2,3-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2,4-DMC6	0.1	0.6	0.2	0.1	0.5	0.2	0.1	0.6	0.2
3,3-DMC6 + t-1,c-2,4-TMCyC5	0.1	0.4	0.1	0.0	0.4	0.1	0.0	0.5	0.2
t-1,c-2,3-TMCyC5	0.0	0.3	0.1	0.0	0.3	0.1	0.0	0.3	0.1
2,3,4-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Toluene + 2,3,3-TMC5	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
2,3-DMC6	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.2	0.1
2-M,3-EC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2-MC7	0.1	0.5	0.2	0.1	0.5	0.2	0.0	0.6	0.2
4-MC7 + 3-M,3-EC5	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.2	0.1
3,4-DMC6	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
3-MC7 + c-1,t-2,3-TMCyC5	0.1	0.5	0.2	0.0	0.4	0.1	0.0	0.6	0.2
RI=781 (DMCyC6)	0.2	1.1	0.4	0.1	0.9	0.4	0.1	1.4	0.4
RI=783 (DMCyC6)	0.1	0.5	0.2	0.1	0.4	0.2	0.1	0.6	0.2
2,2,5-TMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=790	0.0	0.3	0.1	0.0	0.3	0.1	0.0	0.4	0.1
RI=793	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.2	0.1
RI=796	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
nC8	0.1	0.8	0.3	0.1	0.7	0.3	0.1	1.1	0.3
RI=804	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=807	0.0	0.2	0.1	0.0	0.2	0.1	0.0	0.3	0.1
RI=814	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,3,5-TMC6 + c-1,2-EMCyC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=821	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=825	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=831	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
RI=833/834	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
RI=837	0.1	0.9	0.3	0.1	0.7	0.3	0.1	1.1	0.4
RI=843	0.0	0.3	0.1	0.0	0.3	0.1	0.0	0.4	0.1
RI=846	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=849	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=852	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E-Benzene	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=860	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.3	0.1
m+p-Xylene	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
RI=867	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=870	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-MC8 + 2-MC8	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1
RI=877/879	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=883	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
o-Xylene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=890	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=893	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
RI=896	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
nC9	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0

Table 4.4 (cont'd): Composition of hydrocarbons in headspace and occluded gas (volume %).

Sample-ID	H6440	H6440	H6440	H6441	H6441	H6441	H6442	H6442	H6442
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1791.0	1791.0	1791.0	1797.0	1797.0	1797.0	1860.0	1860.0	1860.0
Compound									
C1	55.2	12.9	51.9	27.0	6.7	25.3	40.9	17.1	31.5
C2	9.8	4.0	9.3	17.7	1.3	16.3	11.5	5.6	9.2
C3	6.2	2.7	5.9	12.0	1.7	11.1	10.5	3.2	7.7
RI=316	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
iC4	5.2	1.6	4.9	9.6	3.7	9.1	6.3	1.0	4.2
C4ene	0.0	0.8	0.1	0.0	0.1	0.1	0.3	1.2	0.7
nC4	1.7	1.6	1.7	2.6	1.6	2.5	5.7	1.7	4.1
2,2-DMC3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
RI=418	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=434	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC5	1.4	2.1	1.4	1.9	2.3	1.9	3.1	2.7	3.0
RI=486 (C5ene)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1
RI=493 (C5ene)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1
nC5	0.7	2.3	0.8	0.9	1.5	1.0	2.7	4.8	3.5
RI=529	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1
2,2-DMC4	0.2	0.3	0.2	0.2	0.4	0.3	0.2	0.3	0.2
CyC5 + 2,3-DMC4	1.2	1.7	1.3	1.9	2.7	2.0	1.5	1.5	1.5
2-MC5	0.4	1.7	0.5	0.6	1.6	0.7	0.7	2.7	1.5
RI=569	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-MC5	0.4	1.2	0.4	0.5	1.2	0.5	0.5	1.7	1.0
nC6	0.3	2.1	0.4	0.4	1.7	0.5	0.6	3.5	1.7
2,2-DMC5	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.3	0.1
MCyC5	2.5	5.4	2.7	3.6	7.7	3.9	2.8	4.2	3.3
2,4-DMC5	0.2	0.5	0.2	0.2	0.7	0.3	0.1	0.6	0.3
2,2,3-TMC4	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Benzene	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1
3,3-DMC5	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.2	0.1
CyC6	3.9	8.0	4.2	5.4	11.2	5.9	4.4	5.7	4.9
2-MC6	0.1	0.8	0.2	0.2	0.8	0.2	0.1	1.1	0.5
2,3-DMC5	0.3	1.0	0.3	0.4	1.2	0.5	0.2	1.0	0.5
1,1-DMCyC5	0.3	0.8	0.3	0.4	1.1	0.5	0.3	0.7	0.4
3-MC6	0.2	1.2	0.3	0.3	1.3	0.4	0.2	1.8	0.8
c-1,3-DMCyC5	0.4	1.3	0.5	0.6	1.7	0.7	0.3	1.1	0.6
t-1,3-DMCyC5	0.4	1.5	0.5	0.6	1.9	0.7	0.3	1.3	0.7
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	0.6	2.1	0.7	0.9	2.7	1.0	0.5	1.8	1.0
nC7	0.1	1.2	0.2	0.1	1.2	0.2	0.1	2.0	0.8
MCyC6 + c-1,2-DMCyC5	4.4	16.7	5.3	6.0	19.9	7.2	3.1	9.8	5.7
2,2-DMC6 + 1,1,3-TMCyC5	0.1	0.6	0.2	0.2	0.7	0.2	0.1	0.6	0.3
2,5-DMC6 + 2,2,3-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
2,4-DMC6	0.2	0.8	0.2	0.2	0.8	0.3	0.1	0.9	0.4
3,3-DMC6 + t-1,c-2,4-TMCyC5	0.2	0.8	0.2	0.2	0.8	0.3	0.1	0.7	0.3
t-1,c-2,3-TMCyC5	0.1	0.6	0.2	0.2	0.6	0.2	0.1	0.5	0.2
2,3,4-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Toluene + 2,3,3-TMC5	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2
2,3-DMC6	0.1	0.4	0.1	0.1	0.4	0.1	0.0	0.3	0.2
2-M,3-EC6	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2-MC7	0.1	0.7	0.1	0.1	0.7	0.2	0.1	1.0	0.4
4-MC7 + 3-M,3-EC5	0.0	0.3	0.0	0.0	0.2	0.1	0.0	0.4	0.2
3,4-DMC6	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.2	0.1
3-MC7 + c-1,t-2,3-TMCyC5	0.1	0.8	0.2	0.2	0.7	0.2	0.1	0.8	0.4
RI=781 (DMCyC6)	0.5	2.8	0.7	0.7	2.8	0.9	0.3	2.0	1.0
RI=783 (DMCyC6)	0.2	1.2	0.3	0.3	1.2	0.4	0.1	0.9	0.4
2,2,5-TMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=790	0.1	0.7	0.2	0.2	0.7	0.2	0.1	0.6	0.3
RI=793	0.1	0.5	0.1	0.1	0.5	0.1	0.1	0.4	0.2
RI=796	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1
nC8	0.2	1.8	0.4	0.4	1.7	0.5	0.2	1.8	0.8
RI=804	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1
RI=807	0.1	0.6	0.1	0.1	0.6	0.2	0.1	0.5	0.2
RI=814	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2,3,5-TMC6 + c-1,2-EMCyC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=821	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.1
RI=825	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.2	0.1
RI=831	0.0	0.2	0.0	0.0	0.2	0.1	0.0	0.4	0.2
RI=833/834	0.1	0.4	0.1	0.1	0.3	0.1	0.0	0.3	0.1
RI=837	0.4	3.1	0.7	0.6	2.7	0.8	0.2	2.0	0.9
RI=843	0.1	1.0	0.2	0.2	0.8	0.3	0.1	0.9	0.4
RI=846	0.0	0.3	0.1	0.1	0.2	0.1	0.0	0.2	0.1
RI=849	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=852	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E-Benzene	0.0	0.2	0.0	0.0	0.2	0.1	0.1	0.2	0.1
RI=860	0.1	0.8	0.2	0.2	0.6	0.2	0.1	0.6	0.3
m+p-Xylene	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0.3	0.2
RI=867	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1
RI=870	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-MC8 + 2-MC8	0.1	0.5	0.1	0.1	0.4	0.1	0.1	0.4	0.2
RI=877/879	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=883	0.0	0.4	0.1	0.1	0.2	0.1	0.1	0.2	0.1
o-Xylene	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1
RI=890	0.1	0.4	0.1	0.1	0.3	0.1	0.1	0.3	0.2
RI=893	0.1	0.6	0.1	0.1	0.4	0.1	0.0	0.4	0.2
RI=896	0.0	0.4	0.1	0.1	0.3	0.1	0.0	0.2	0.1
nC9	0.0	0.3	0.1	0.0	0.3	0.1	0.1	0.4	0.2

Table 4.4 (cont'd): Composition of hydrocarbons in headspace and occluded gas (volume %).

Sample-ID	H6443	H6443	H6443	H6444	H6444	H6444	H6445	H6445	H6445
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1905.0	1905.0	1905.0	1914.0	1914.0	1914.0	1923.0	1923.0	1923.0
Compound									
C1	68.7	10.8	65.1	60.2	15.2	56.4	61.7	19.1	56.6
C2	15.1	3.1	14.3	16.0	3.9	15.0	14.4	4.2	13.2
C3	7.3	6.4	7.3	9.3	5.0	8.9	8.6	4.4	8.1
RI=316	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0
iC4	2.8	7.3	3.1	3.9	4.9	4.0	3.5	3.7	3.5
C4ene	0.1	0.4	0.1	0.1	0.8	0.2	0.2	0.7	0.2
nC4	1.3	6.1	1.6	2.1	4.6	2.3	2.5	4.6	2.7
2,2-DMC3	0.0	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1
RI=418	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
RI=434	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC5	0.5	4.6	0.8	0.9	4.2	1.2	1.2	4.3	1.5
RI=486 (C5ene)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=493 (C5ene)	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
nC5	0.2	3.1	0.4	0.5	3.2	0.7	0.8	4.5	1.2
RI=529	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
2,2-DMC4	0.0	0.4	0.1	0.1	0.4	0.1	0.1	0.3	0.1
CyC5 + 2,3-DMC4	0.5	3.9	0.7	0.7	3.3	0.9	0.7	2.5	0.9
2-MC5	0.1	2.0	0.2	0.2	2.1	0.4	0.3	2.5	0.5
RI=569	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
3-MC5	0.1	1.5	0.2	0.2	1.6	0.3	0.2	1.7	0.4
nC6	0.1	1.4	0.1	0.1	1.7	0.3	0.2	2.4	0.5
2,2-DMC5	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
MCyC5	0.6	8.2	1.1	1.1	7.5	1.6	1.0	5.6	1.6
2,4-DMC5	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.4	0.1
2,2,3-TMC4	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Benzene	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.1	0.2
3,3-DMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
CyC6	1.0	11.2	1.7	1.7	10.1	2.4	1.6	7.6	2.3
2-MC6	0.0	0.4	0.0	0.0	0.5	0.1	0.0	0.7	0.1
2,3-DMC5	0.0	0.8	0.1	0.1	0.9	0.1	0.1	0.9	0.2
1,1-DMCyC5	0.1	0.8	0.1	0.1	0.8	0.2	0.1	0.7	0.2
3-MC6	0.0	0.8	0.1	0.1	1.0	0.1	0.1	1.2	0.2
c-1,3-DMCyC5	0.1	1.3	0.1	0.1	1.3	0.2	0.1	1.1	0.2
t-1,3-DMCyC5	0.1	1.3	0.1	0.1	1.3	0.2	0.1	1.2	0.2
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	0.1	2.0	0.2	0.2	2.0	0.3	0.2	1.7	0.4
nC7	0.0	0.5	0.1	0.0	0.7	0.1	0.0	1.1	0.2
MCyC6 + c-1,2-DMCyC5	0.6	10.3	1.2	1.0	10.4	1.8	1.0	8.6	1.9
2,2-DMC6 + 1,1,3-TMCyC5	0.0	0.3	0.0	0.0	0.4	0.1	0.0	0.4	0.1
2,5-DMC6 + 2,2,3-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2,4-DMC6	0.0	0.6	0.1	0.0	0.6	0.1	0.1	0.7	0.1
3,3-DMC6 + t-1,c-2,4-TMCyC5	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.5	0.1
t-1,c-2,3-TMCyC5	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.4	0.1
2,3,4-TMC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Toluene + 2,3,3-TMC5	0.1	0.3	0.1	0.1	0.3	0.1	0.1	0.2	0.2
2,3-DMC6	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
2-M,3-EC6	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2-MC7	0.0	0.3	0.0	0.0	0.4	0.1	0.0	0.5	0.1
4-MC7 + 3-M,3-EC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
3,4-DMC6	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
3-MC7 + c-1,t-2,3-TMCyC5	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.4	0.1
RI=781 (DMCyC6)	0.0	1.0	0.1	0.1	1.1	0.2	0.1	1.3	0.2
RI=783 (DMCyC6)	0.0	0.4	0.0	0.0	0.5	0.1	0.0	0.5	0.1
2,2,5-TMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=790	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.4	0.1
RI=793	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.4	0.1
RI=796	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
nC8	0.0	0.7	0.1	0.1	0.8	0.1	0.1	1.0	0.2
RI=804	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=807	0.0	0.3	0.0	0.0	0.3	0.1	0.0	0.3	0.1
RI=814	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
2,3,5-TMC6 + c-1,2-EMCyC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=821	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=825	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=831	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
RI=833/834	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
RI=837	0.0	0.7	0.1	0.1	0.9	0.1	0.1	1.0	0.2
RI=843	0.0	0.4	0.0	0.0	0.4	0.1	0.0	0.5	0.1
RI=846	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0
RI=849	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=852	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E-Benzene	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
RI=860	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.3	0.1
m+p-Xylene	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
RI=867	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=870	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
4-MC8 + 2-MC8	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
RI=877/879	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=883	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
o-Xylene	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=890	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0
RI=893	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
RI=896	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
nC9	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.3	0.1

Table 4.4 (cont'd): Composition of hydrocarbons in headspace and occluded gas (volume %).

Sample-ID	H6446	H6446	H6446	H6447	H6447	H6447	H6448	H6448	H6448
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	2058.0	2058.0	2058.0	2103.0	2103.0	2103.0	2112.0	2112.0	2112.0
Compound									
C1	23.2	0.9	18.7	41.5	1.4	33.6	46.9	2.1	40.6
C2	17.2	2.2	14.2	20.0	8.6	17.8	19.5	6.5	17.7
C3	28.2	17.7	26.1	23.9	36.9	26.5	21.5	34.1	23.3
RI=316	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC4	5.0	7.5	5.5	3.4	8.1	4.3	2.8	8.2	3.6
C4ene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nC4	11.3	21.4	13.4	6.4	21.6	9.3	5.0	21.5	7.4
2,2-DMC3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0
RI=418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=434	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
iC5	3.0	9.9	4.4	1.3	6.1	2.2	1.1	6.5	1.8
RI=486 (C5ene)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=493 (C5ene)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nC5	3.8	13.9	5.9	1.3	7.0	2.4	0.9	7.1	1.8
RI=529	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,2-DMC4	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0
CyC5 + 2,3-DMC4	0.5	1.2	0.6	0.2	0.7	0.3	0.2	0.9	0.3
2-MC5	0.7	3.4	1.2	0.2	1.1	0.4	0.1	1.4	0.3
RI=569	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-MC5	0.4	2.0	0.7	0.1	0.7	0.2	0.1	0.9	0.2
nC6	1.1	5.2	1.9	0.2	1.3	0.4	0.1	1.5	0.3
2,2-DMC5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MCyC5	0.9	2.3	1.2	0.4	1.5	0.6	0.4	2.2	0.6
2,4-DMC5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2,2,3-TMC4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benzene	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1
3,3-DMC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CyC6	1.2	2.6	1.5	0.3	1.0	0.5	0.2	1.2	0.4
2-MC6	0.1	0.6	0.2	0.0	0.1	0.0	0.0	0.1	0.0
2,3-DMC5	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0
1,1-DMCyC5	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0
3-MC6	0.1	0.6	0.2	0.0	0.2	0.1	0.0	0.2	0.0
c-1,3-DMCyC5	0.1	0.3	0.1	0.0	0.2	0.1	0.1	0.4	0.1
t-1,3-DMCyC5	0.1	0.3	0.1	0.0	0.2	0.1	0.1	0.4	0.1
t-1,2-DMCyC5 + 3-EC5 + 2,2,4-TMC5	0.1	0.5	0.2	0.1	0.4	0.1	0.1	0.7	0.2
nC7	0.3	1.3	0.5	0.0	0.2	0.1	0.0	0.3	0.1
MCyC6 + c-1,2-DMCyC5	0.9	2.5	1.2	0.2	0.9	0.3	0.2	1.3	0.4
2,2-DMC6 + 1,1,3-TMCyC5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,5-DMC6 + 2,2,3-TMC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,4-DMC6	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.0
3,3-DMC6 + t-1,c-2,4-TMCyC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
t-1,c-2,3-TMCyC5	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.0
2,3,4-TMC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Toluene + 2,3,3-TMC5	0.5	0.3	0.4	0.1	0.1	0.1	0.1	0.2	0.1
2,3-DMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-M,3-EC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-MC7	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0
4-MC7 + 3-M,3-EC5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3,4-DMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-MC7 + c-1,t-2,3-TMCyC5	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
RI=781 (DMCyC6)	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.2	0.0
RI=783 (DMCyC6)	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
2,2,5-TMC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=790	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
RI=793	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
RI=796	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nC8	0.1	0.3	0.1	0.0	0.1	0.0	0.0	0.1	0.0
RI=804	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=807	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=814	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2,3,5-TMC6 + c-1,2-EMCyC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=821	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=825	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=831	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=833/834	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=837	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0
RI=843	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=846	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=849	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=852	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E-Benzene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=860	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
m+p-Xylene	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0
RI=867	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=870	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-MC8 + 2-MC8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=877/879	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=883	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
o-Xylene	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
RI=890	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=893	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RI=896	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
nC9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 4.5
Ratios and summary data

(See table 2.5 for explanations and comments;
-1 = ratio cannot be calculated)

Table 4.5 Ratios and summary data. (see Table 2.5 for explanation and comments; -1 = ratio cannot be calculated)

Sample-ID	H6437	H6437	H6437	H6438	H6438	H6438	H6439	H6439	H6439
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1726	1726	1726	1735	1735	1735	1744	1744	1744
Compound									
CncC1	17977	150	18127	4867	117	4984	18389	115	18504
CncC2C4	22309	2854	25163	7056	1241	8296	17614	2305	19920
CncC5C9	7576	11694	19270	2552	4671	7222	5205	11365	16571
CncC1C9	47862	14697	62559	14474	6029	20503	41208	13786	54995
PctC1	37.6	1.0	29.0	33.6	1.9	24.3	44.6	0.8	33.6
PctC2C4	46.6	19.4	40.2	48.7	20.6	40.5	42.7	16.7	36.2
PctC5C9	15.8	79.6	30.8	17.6	77.5	35.2	12.6	82.4	30.1
PctC1C9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wetness	55.4	95.0	58.1	59.2	91.4	62.5	48.9	95.2	51.8
RatiC4nC4	0.7	0.5	0.6	0.7	0.5	0.6	0.7	0.5	0.6
PctnC7	6.1	7.9	7.3	7.4	9.7	9.1	6.2	8.7	8.1
PctIsoC7	16.6	22.0	20.2	19.3	25.4	23.7	16.8	21.5	20.4
PctCycC7	76.0	69.7	71.8	70.8	64.3	66.1	75.6	69.4	70.9
PctAroC7	1.4	0.3	0.7	2.5	0.6	1.1	1.3	0.4	0.6
PctSumC7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Thompson_A	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Thompson_B	0.3	0.0	0.1	0.4	0.1	0.1	0.2	0.0	0.1
Thompson_X	0.3	0.1	0.2	0.6	0.2	0.3	0.3	0.1	0.2
Thompson_C	0.2	0.4	0.3	0.3	0.5	0.4	0.3	0.4	0.3
Thompson_I	0.5	0.7	0.7	0.6	0.8	0.8	0.5	0.7	0.7
Thompson_F	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1
Thompson_H	3.7	5.7	5.0	4.5	7.2	6.3	3.8	6.3	5.6
Thompson_R	1.5	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6
Thompson_U	16.0	6.7	9.2	13.6	5.5	7.3	15.5	6.3	8.0
Mango_P1	6.1	7.9	7.3	7.4	9.7	9.1	6.2	8.7	8.1
Mango_P2	9.4	12.8	11.7	11.3	15.3	14.2	9.6	12.8	12.1
Mango_N2	13.8	13.7	13.7	14.9	14.2	14.4	14.8	13.2	13.6
Mango_K1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Sample-ID	H6440	H6440	H6440	H6441	H6441	H6441	H6442	H6442	H6442
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1791	1791	1791	1797	1797	1797	1860	1860	1860
Compound									
CncC1	7234	142	7376	6260	145	6404	1138	311	1449
CncC2C4	3002	119	3121	9723	182	9906	956	236	1191
CncC5C9	2877	839	3717	7185	1847	9033	691	1270	1961
CncC1C9	13113	1101	14214	23168	2175	25343	2784	1817	4601
PctC1	55.2	12.9	51.9	27.0	6.7	25.3	40.9	17.1	31.5
PctC2C4	22.9	10.8	22.0	42.0	8.4	39.1	34.3	13.0	25.9
PctC5C9	21.9	76.2	26.1	31.0	85.0	35.6	24.8	69.9	42.6
PctC1C9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wetness	29.3	45.6	29.7	60.8	55.8	60.7	45.7	43.1	45.1
RatiC4nC4	3.1	1.0	2.9	3.7	2.3	3.6	1.1	0.6	1.0
PctnC7	1.5	4.5	2.2	1.4	3.6	2.0	1.9	9.1	7.1
PctIsoC7	13.1	14.1	13.3	13.2	13.7	13.3	11.9	22.7	19.7
PctCycC7	85.1	81.1	84.1	84.9	82.3	84.3	82.3	67.3	71.5
PctAroC7	0.4	0.4	0.4	0.5	0.3	0.5	3.9	0.8	1.7
PctSumC7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Thompson_A	0.2	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.1
Thompson_B	0.3	0.1	0.2	0.4	0.1	0.3	2.3	0.1	0.3
Thompson_X	0.2	0.2	0.2	0.3	0.2	0.2	0.9	0.2	0.3
Thompson_C	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.3	0.2
Thompson_I	0.2	0.4	0.3	0.2	0.3	0.3	0.2	0.7	0.6
Thompson_F	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1
Thompson_H	0.9	3.4	1.5	0.9	2.6	1.3	1.1	7.2	5.0
Thompson_R	0.8	1.6	1.1	0.8	1.5	1.0	1.2	1.8	1.7
Thompson_U	30.2	10.4	23.5	30.3	13.8	25.4	51.9	5.2	10.1
Mango_P1	1.5	4.5	2.2	1.4	3.6	2.0	1.9	9.1	7.1
Mango_P2	4.7	7.1	5.3	4.8	6.3	5.1	4.9	13.3	11.0
Mango_N2	15.3	13.0	14.8	15.5	14.1	15.2	16.3	14.0	14.6
Mango_K1	1.1	1.0	1.1	1.1	1.1	1.1	0.9	0.9	0.9

Table 4.5 (cont'd.): Ratios and summary data. (see Table 2.5 for explanation and comments; -1 = ratio cannot be calculated)

Sample-ID	H6443	H6443	H6443	H6444	H6444	H6444	H6445	H6445	H6445
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	1905	1905	1905	1914	1914	1914	1923	1923	1923
Compound									
CncC1	9015	95	9110	4100	94	4194	3002	125	3127
CncC2C4	3485	207	3692	2145	120	2265	1417	117	1534
CncC5C9	621	579	1200	570	407	977	450	414	863
CncC1C9	13121	881	14002	6814	621	7435	4868	656	5524
PctC1	68.7	10.8	65.1	60.2	15.2	56.4	61.7	19.1	56.6
PctC2C4	26.6	23.5	26.4	31.5	19.4	30.5	29.1	17.9	27.8
PctC5C9	4.7	65.7	8.6	8.4	65.5	13.1	9.2	63.0	15.6
PctC1C9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wetness	27.9	68.6	28.8	34.3	56.1	35.1	32.1	48.3	32.9
RatiC4nC4	2.1	1.2	1.9	1.8	1.1	1.7	1.4	0.8	1.3
PctnC7	1.7	2.8	2.3	1.9	3.6	2.7	2.5	5.8	4.3
PctIsoC7	10.6	14.2	12.6	11.3	15.7	13.4	12.7	19.3	16.4
PctCycC7	82.5	81.4	81.9	81.0	79.4	80.2	77.6	73.5	75.3
PctAroC7	5.2	1.6	3.3	5.8	1.3	3.6	7.2	1.4	4.0
PctSumC7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Thompson_A	2.5	0.3	1.1	1.5	0.1	0.8	1.0	0.1	0.4
Thompson_B	3.5	0.7	1.6	3.5	0.4	1.5	3.3	0.3	1.0
Thompson_X	0.3	0.1	0.2	0.4	0.2	0.3	0.7	0.2	0.4
Thompson_C	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Thompson_I	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.5	0.4
Thompson_F	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Thompson_H	0.9	1.8	1.3	1.0	2.4	1.6	1.4	4.1	2.7
Thompson_R	1.3	1.3	1.3	1.2	1.4	1.3	1.3	1.6	1.5
Thompson_U	72.9	26.3	41.8	57.4	19.1	33.8	41.6	11.3	20.4
Mango_P1	1.7	2.8	2.3	1.9	3.6	2.7	2.5	5.8	4.3
Mango_P2	4.2	6.6	5.5	4.8	7.6	6.1	5.7	10.4	8.3
Mango_N2	17.3	17.5	17.4	16.7	17.1	16.9	16.8	16.2	16.5
Mango_K1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0

Sample-ID	H6446	H6446	H6446	H6447	H6447	H6447	H6448	H6448	H6448
Gas fraction	H	O	H+O	H	O	H+O	H	O	H+O
Depth (m)	2058	2058	2058	2103	2103	2103	2112	2112	2112
Compound									
CncC1	19812	192	20004	50430	411	50841	35323	254	35577
CncC2C4	52827	10537	63364	65291	22268	87558	36821	8676	45497
CncC5C9	12879	10878	23758	5861	6908	12769	3093	3398	6491
CncC1C9	85519	21608	107127	121582	29587	151168	75237	12328	87565
PctC1	23.2	0.9	18.7	41.5	1.4	33.6	46.9	2.1	40.6
PctC2C4	61.8	48.8	59.1	53.7	75.3	57.9	48.9	70.4	52.0
PctC5C9	15.1	50.3	22.2	4.8	23.3	8.4	4.1	27.6	7.4
PctC1C9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wetness	72.7	98.2	76.0	56.4	98.2	63.3	51.0	97.2	56.1
RatiC4nC4	0.4	0.4	0.4	0.5	0.4	0.5	0.6	0.4	0.5
PctnC7	11.2	17.8	14.0	6.4	8.6	7.6	4.1	6.6	5.4
PctIsoC7	13.6	24.2	18.2	10.6	17.0	14.0	7.8	14.4	11.2
PctCycC7	55.0	54.5	54.8	63.6	69.5	66.7	68.6	74.5	71.7
PctAroC7	20.3	3.6	13.0	19.4	4.9	11.8	19.5	4.5	11.8
PctSumC7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Thompson_A	0.1	0.0	0.1	0.2	0.0	0.1	0.4	0.1	0.2
Thompson_B	2.1	0.2	1.1	3.5	0.6	1.8	5.5	0.8	2.5
Thompson_X	3.4	0.5	2.0	3.7	0.7	2.1	2.8	0.6	1.6
Thompson_C	0.6	1.2	0.8	0.4	0.7	0.6	0.3	0.6	0.5
Thompson_I	0.8	1.1	0.9	0.3	0.3	0.3	0.2	0.2	0.2
Thompson_F	0.2	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.1
Thompson_H	8.3	13.1	10.4	4.6	6.3	5.5	3.2	5.1	4.2
Thompson_R	2.5	2.1	2.3	2.0	1.7	1.8	2.0	1.7	1.8
Thompson_U	11.4	4.5	7.4	17.5	7.8	11.3	20.5	8.0	12.2
Mango_P1	11.2	17.8	14.0	6.4	8.6	7.6	4.1	6.6	5.4
Mango_P2	9.8	17.5	13.2	7.3	11.5	9.5	5.2	9.3	7.3
Mango_N2	9.9	11.7	10.7	16.3	20.6	18.6	19.4	23.1	21.3
Mango_K1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Appendix 4
Sample summary reports

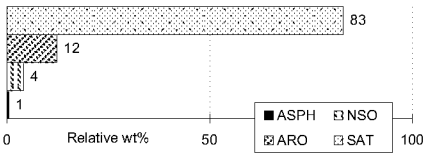
Country, well/location:	**NOR, 25/11-24**
Sample type, depth (m):	**FLUI, 2029.5-2029.5 m MD RKB**
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

Fluid sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

OrgID: 2471188, PlantID: 692436

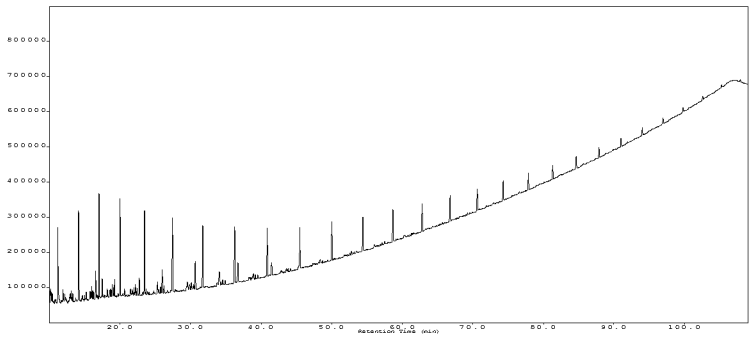
Iatroscan



δ13C fractions

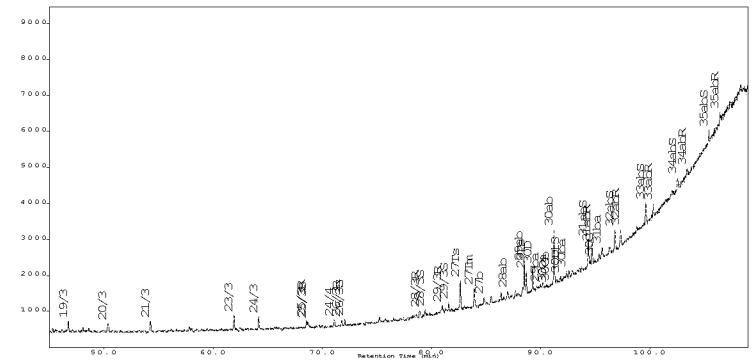
Sat.	-29.4
Aro.	-27.9
NSO	
Asph.	
EOM / Oil	

C15+ SAT-fraction hydrocarbons, GC/FID:



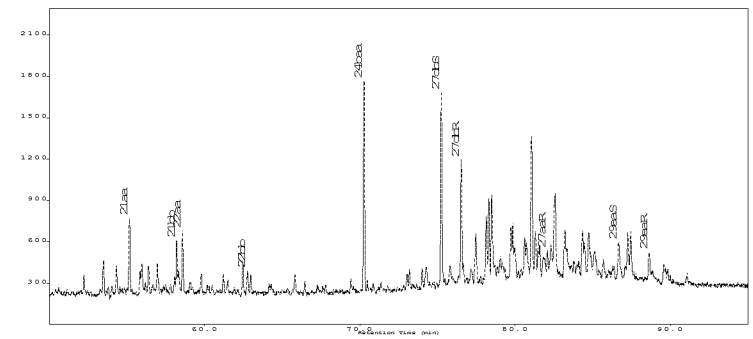
Parameter/amounts, µg/mg	
Pr/nC_{17}	0.4
Ph/nC_{18}	0.3
Pr/Ph	1.4
$nC_{17}/(C_{17}+C_{27})$	0.8
CPI2	1.0
nC_{17}	8.1
Pristane	3.3
ΣC15-C35	91

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	18.98
%20/3	10.8
%23/3	40.7
%24/4	25.5
C26/C25	0.9
%27Ts	59.7
%28αβ	20.0
%29Ts	45.9
%25nor30αβ	5.7
%29αβ	42.4
%30βα	12.3
%30D	41.0
%30G	9.9
%32αβS	55.1
%35αβ	52.7
30αβ	11.8
25nor30αβ	0.7
Σterpanes	105
%Pregnane	15.5
%29ααS	57.0
%29ββ	65.9
%27dia	69.3
%27ster. Norm	35.0
%28ster. Norm	25.3
%29ster. Norm	30.9
%30ster. Norm	8.8
Σsteranes	88
Hop/Ste	1.2

Steranes, m/z 217:



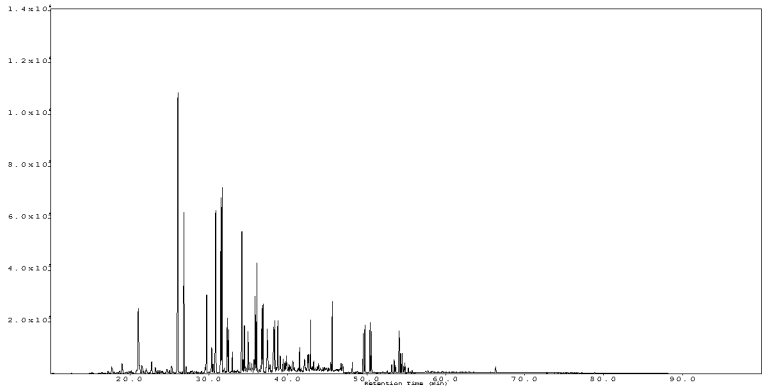
Country, well/location:	**NOR, 25/11-24**
Sample type, depth (m):	**FLUI, 2029.5-2029.5 m MD RKB**
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

Fluid sample

NYDRO
E&P Reserach Centre,
Bergen, Norway

OrgID: 2471188, PlantID: 692436

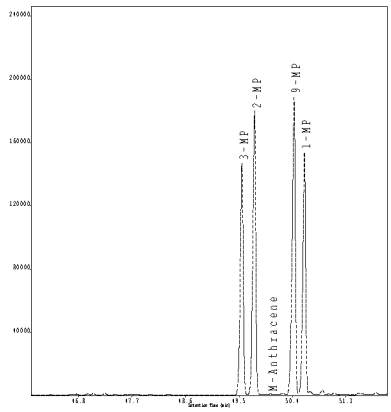
Aromatic hydrocarbons, TIC:



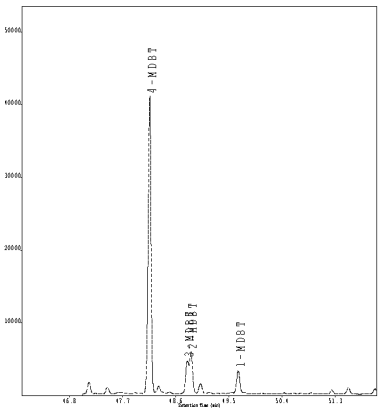
Parameter/amounts, ng/mg	
2/1MN	1.73
2/1EN	4.27
Phen.	395
MPI1	0.87
F1 (2+3/all MP)	0.49
F2 (2/all MP)	0.27
%TAS	70
DBT/P	0.01
F/P	0.55
BP/1.6DMN	1.28
4/1MDBT	13.18
3MP/R	30.59
ΣARO HC	3838

Aromatic and Diamondoid hydrocarbons, GC/MS:

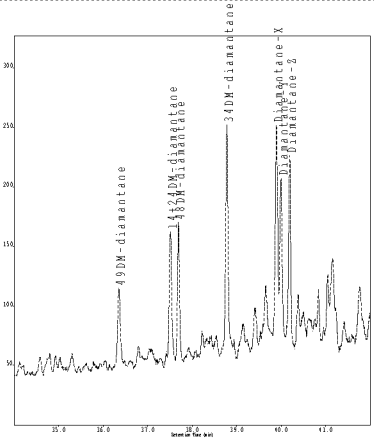
Dimethyl-phenanthrenes (m/z 192):



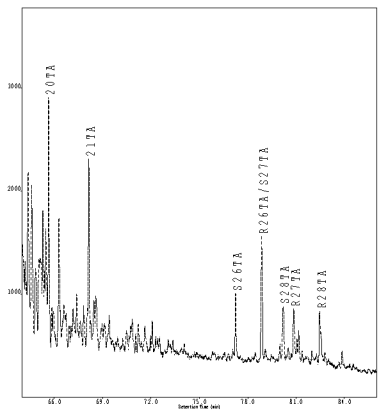
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



Parameter/amounts, ng/mg	
EAI%	60.8
DMDI%	74.1
%49DM-Diam.	17.9
%48DM-Diam.	30.9
%34DM-Diam.	51.2

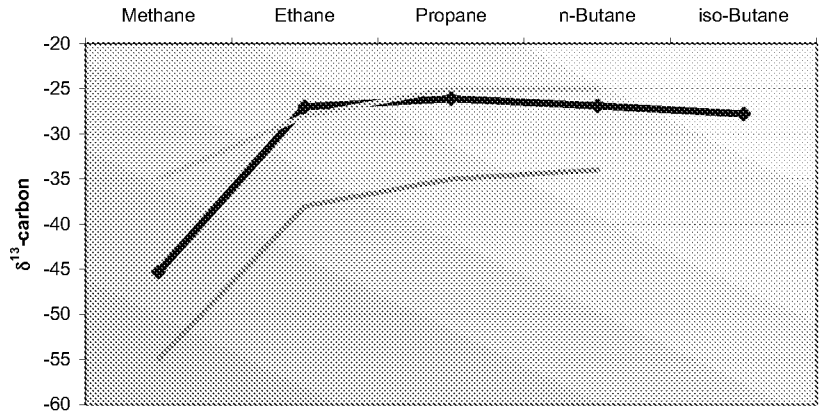
Country, well/location:	**NOR, 25/11-24**
Sample type, depth (m):	**FLUI, 2029.5-2029.5 m MD RKB**
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: , PlanID:	

Fluid sample

NYDRO

E&P Reserach Centre,
Bergen, Norway

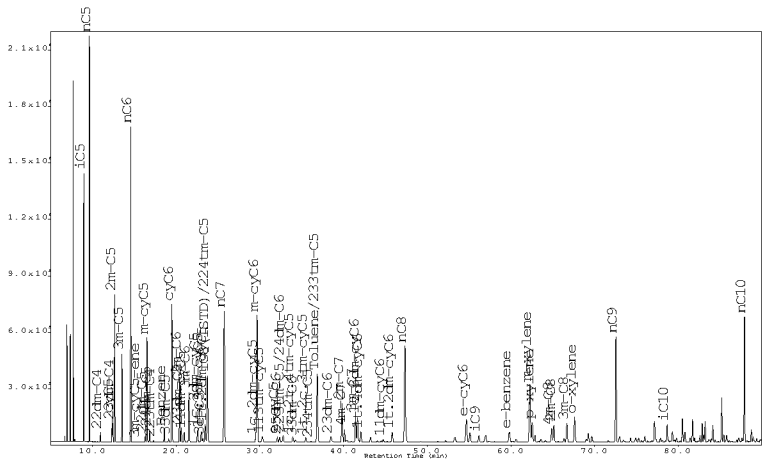
Gaseous HC:



Gaseous HC, wt%	
Wetness	
iC4/nC4	
C2/C3	
CO2	

Gaseous HC, isotopes ‰	
d13C C1	-45.3
d13C C2	-27
d13C C3	-26.1
d13C C4	-26.9
d13C iC4	-27.8
dD C1	0

Light HC C5-10, GC/FID:



Parameter/amounts, ug/mg	
Hepane value	26.3
Isohept. value	2.1
Paraffinicity	0.9
Aromaticity	0.8
nC_6/Benzene	19.3
nC_7/Toluene	1.7
ΣC5-C20	370

Whole oil, GC/FID:

Parameter/amounts, ug/mg

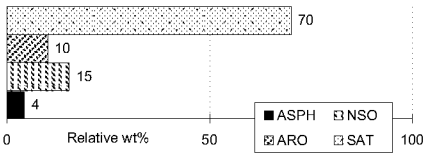
Country, well/location:	**NOR, 25/11-24**
Sample type, depth (m):	**SWC, 2031.3-2031.3 m MD RKB**
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

Sediment sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

OrgID: 2467751, PlantID: 692483

Iatroscan



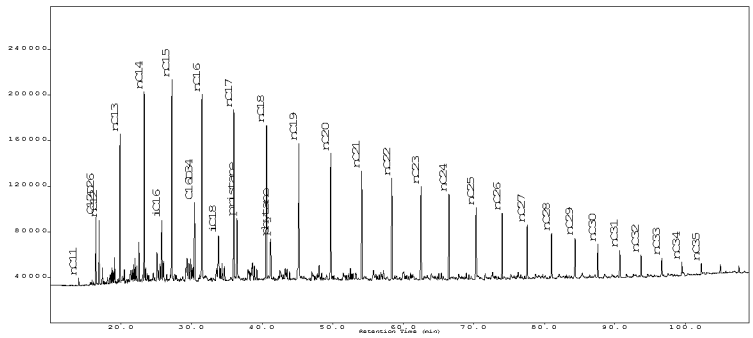
RockEval

S1	6.9
S2	1.4
PI	0.8
Tmax	291
TOC	0.8
HI	173
EOM wt%	1.2

δ13C fractions

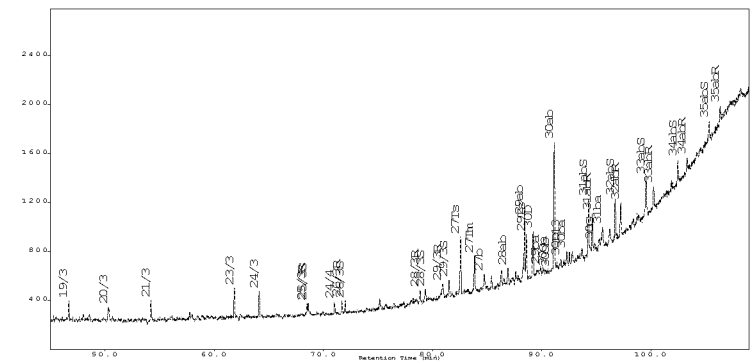
Sat.	-29.4
Aro.	-28.0
NSO	
Asph.	
EOM / Oil	
Kerogen	

C15+ SAT-fraction hydrocarbons, GC/FID:



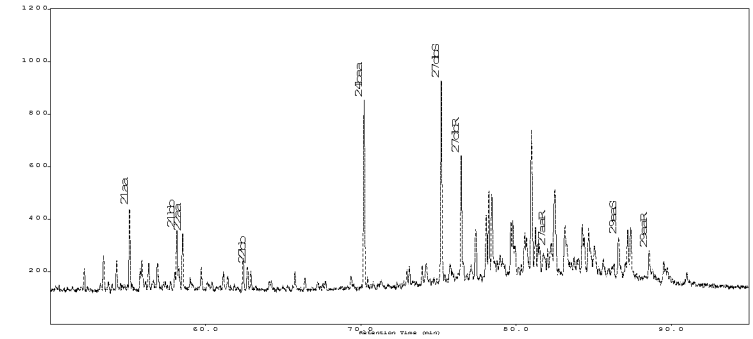
Parameter/amounts, ug/mg	
Pr/nC_{17}	0.4
Ph/nC_{18}	0.3
Pr/Ph	1.4
$nC_{17}/(C_{17}+C_{27})$	0.8
CPI2	1.0
nC_{17}	7.9
Pristane	3.3
ΣC15-C35	90

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	18.3
%20/3	9.9
%23/3	44.8
%24/4	26.4
C26/C25	1.2
%27Ts	62.1
%28αβ	17.1
%29Ts	41.1
%25nor30αβ	3.8
%29αβ	41.1
%30βα	10.5
%30D	36.0
%30G	11.7
%32αβS	55.6
%35αβ	46.7
30αβ	15.4
25nor30αβ	0.6
Σterpanes	114
%Pregnane	15.0
%29ααS	58.4
%29ββ	65.5
%27dia	69.1
%27ster. Norm	34.7
%28ster. Norm	25.3
%29ster. Norm	30.6
%30ster. Norm	9.4
Σsteranes	92
Hop/Ste	1.2

Steranes, m/z 217:



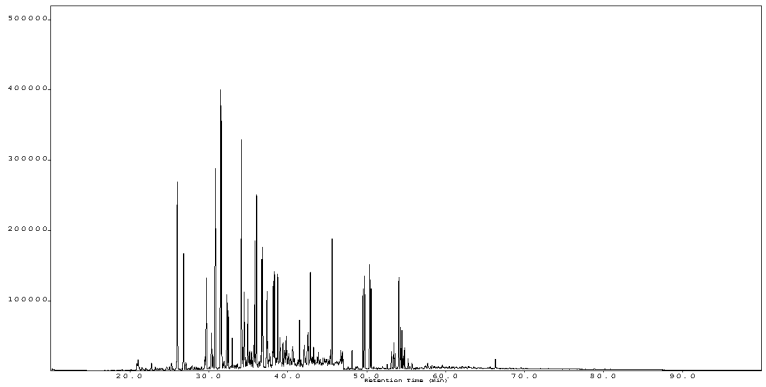
Country, well/location:	**NOR, 25/11-24**
Sample type, depth (m):	**SWC, 2031.3-2031.3 m MD RKB**
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

Sediment sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

OrgID: 2467751, PlantID: 692483

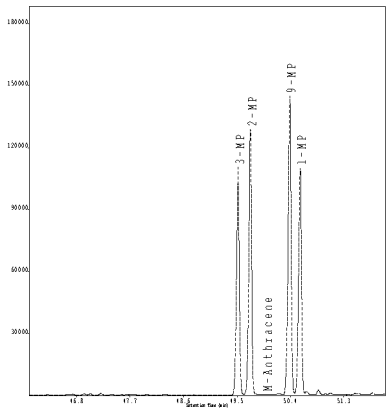
Aromatic hydrocarbons, TIC:



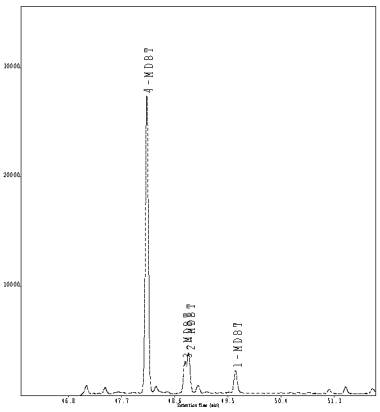
Parameter/amounts, ng/mg	
2/1MN	1.6
2/1EN	4.1
Phen.	362
MPI1	0.9
F1 (2+3/all MP)	0.5
F2 (2/all MP)	0.3
%TAS	69.8
DBT/P	0.0
F/P	0.4
BP/1.6DMN	1.1
4/1MDBT	13.1
3MP/R	30.7
ΣARO HC	2944

Aromatic and Diamondoid hydrocarbons, GC/MS:

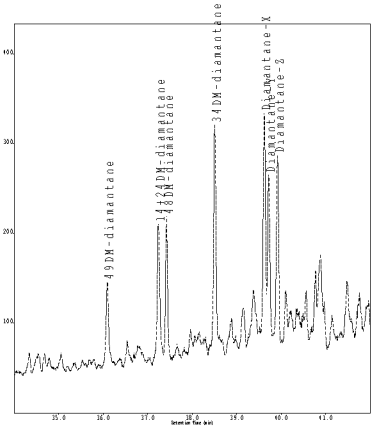
Dimethyl-phenanthrenes (m/z 192):



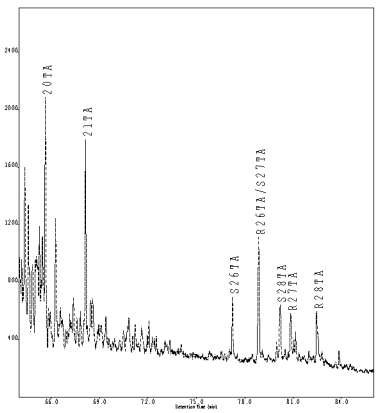
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



Parameter/amounts, ng/mg	
EAI%	69
DMDI%	72
%49DM-Diam.	19
%48DM-Diam.	32
%34DM-Diam.	49