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Table 1.1: Detailed analytical programme.

Well	Type	End Depth MD RKB	End Depth TVD	RE	E/D	Iatro	SatHC	SatMe	DiaMS	AroMS	13G	Gve	VIT
6507/11-7	DC	1010	983,8										1
6507/11-7	DC	1110	1083,7										1
6507/11-7	DC	1200	1173,6										1
6507/11-7	DC	1290	1263,5										1
6507/11-7	DC	1400	1373,5										1
6507/11-7	DC	1500	1473,5										1
6507/11-7	GASM	1540	1513,5								1		
6507/11-7	DC	1600	1573,5										1
6507/11-7	DC	1700	1673,5										1
6507/11-7	DC	1740	1713,5										1
6507/11-7	DC	1800	1773,4										1
6507/11-7	DC	1900	1873,4										1
6507/11-7	GASM	1900	1873,4								1		
6507/11-7	DC	2000	1973,3										1
6507/11-7	DC	2040	2013,3										1
6507/11-7	GASM	2040	2013,3								1		
6507/11-7	DC	2060	2033,3										1
6507/11-7	DC	2100	2073,2										1
6507/11-7	GASM	2160	2133,2								1		
6507/11-7	GASM	2180	2153,2								1		
6507/11-7	DC	2200	2173,2										1
6507/11-7	DC	2230	2203,1										1
6507/11-7	DC	2250	2223,1										1
6507/11-7	DC	2300	2273,1										1
6507/11-7	DC	2400	2373,0										1
6507/11-7	DC	2500	2472,9										1
6507/11-7	DC	2510	2482,9										1
6507/11-7	DC	2520	2492,9										1
6507/11-7	DC	2600	2572,9										1
6507/11-7	DC	2698	2670,8										1
6507/11-7	DC	2752	2724,8	1									
6507/11-7	GASM	2752	2724,8								1		
6507/11-7	GASM	2758	2730,8								1		
6507/11-7	DC	2770	2742,8										1
6507/11-7	DC	2776	2748,8	1	1	1							
6507/11-7	DC	2782	2754,8	1	1	1							
6507/11-7	DCG	2782	2754,8									1	
6507/11-7	DC	2788	2760,8	1									
6507/11-7	DCG	2788	2760,8									1	
6507/11-7	DC	2791	2763,8										1
6507/11-7	DC	2794	2766,8	1	1	1							
6507/11-7	DCG	2794	2766,8									1	
6507/11-7	SWC	2796	2768,8	1									
6507/11-7	DC	2800	2772,8	1									
6507/11-7	DCG	2800	2772,8									1	
6507/11-7	MUD	2800	2772,8		1	1							
6507/11-7	SWC	2803	2775,8	1									
6507/11-7	DC	2806	2778,8	1									
6507/11-7	DCG	2806	2778,8									1	
6507/11-7	SWC	2812	2784,8	1									
6507/11-7	DC	2812	2784,8	1									
6507/11-7	DCG	2812	2784,8									1	
6507/11-7	GASM	2812	2784,8								1		
6507/11-7	DC	2818	2790,8	1									
6507/11-7	DCG	2818	2790,8									1	
6507/11-7	DC	2824	2796,8	1	1	1							
6507/11-7	DC	2830	2802,8	1									
6507/11-7	DC	2833	2805,8	1	1	1							
6507/11-7	DC	2836	2808,8	1	1	1							
6507/11-7	DC	2839	2811,8	1									
6507/11-7	DC	2842	2814,8	1	1	1	1	1	1	1			

Table 1.1 continues: Detailed analytical programme.

Well	Type	End Depth MD RKB	End Depth TVD	RE	E/D	Iatro	SatHC	SatMs	DiaMS	AroMS	13G	Gve	VIT
6507/11-7	DC	2845	2817,8	1	1	1							
6507/11-7	DC	2848	2820,8	1	1	1							
6507/11-7	GASM	2848	2820,8								1		
6507/11-7	DC	2851	2823,8										1
6507/11-7	SWC	2851,5	2824,3	1	1	1	1	1	1	1			
6507/11-7	DC	2854	2826,8	1	1	1							
6507/11-7	GASM	2854	2826,8								1		
6507/11-7	DC	2857	2829,8	1									
6507/11-7	DC	2860	2832,8	1	1	1							
6507/11-7	DC	2863	2835,8	1									
6507/11-7	DC	2866	2838,8	1	1	1	1	1	1	1			
6507/11-7	MUD	2900	2872,8		1	1	1	1	1	1			
6507/11-7	DC	2905	2877,8										1
6507/11-7	DC	2908	2880,8	1									
6507/11-7	DC	2914	2886,8	1									
6507/11-7	DC	2944	2916,8										1
6507/11-7	GASM	2944	2916,8								1		
6507/11-7	DC	2950	2922,8	1									

2 Experimental

The analytical and preparative methods employed in this study, comprise geochemical characterisation 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 (Weiss et al., 2000). 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 annotated "Reference" represent North Sea reference oil (NGS-NSO1) and reflect the analytical repeatability.

All depths are quoted as measured depths in m RKB MD.

Analytical results are given in Appendix I.

Original reports from Institute of Energy Technology (IFE) on vitrinite reflectance and molecular composition of head space gas are given in Appendices II and III.

3 Sample quality and mud contamination

Sample material from well 6507/11-7 consisted of five side wall cores, drill cuttings and mud gas bags. After sample material was taken for biostratigraphic analysis, only small amounts of four side wall cores remained. The content of hydrocarbons in the mud gas bags was also low. A total of 11 mud gas samples taken throughout the well were analysed, but none of them contained sufficient hydrocarbon gas for stabile carbon isotope measurements.

Well 6507/11-7 was drilled using a water based mud system, containing organic polymers and Ultrafree NS with hydrocarbon components in the range of C_{14}-C_{16} (Friestad A. M., oral communication). Both side wall cores and drill cuttings are found to be heavily contaminated by this mud.

For reference, a mud sample taken at 2900 m RKB MD was extracted, group type separated and analysed by GC-MS. The chromatogram of the saturate fraction of the mud contains large amounts of light molecular weight components up to nC_{18} (Appendix I). Aromatic compounds and biomarkers are on the other hand only present in minute amounts. Parameters based on aromatics and biomarkers can therefore be used to characterise in-situ organic material in the samples.

APPENDIX I

Summary reports of analysed samples

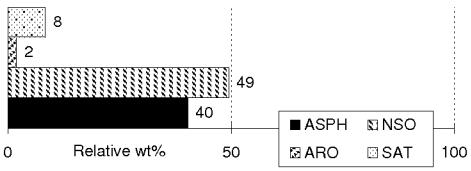
Country, well/location:	NOR, 1682984
Sample type, depth (m):	DC, 2839-2842 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

Sediment sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

OrgID: 2470448, PlanID: 692376

Iatroscan



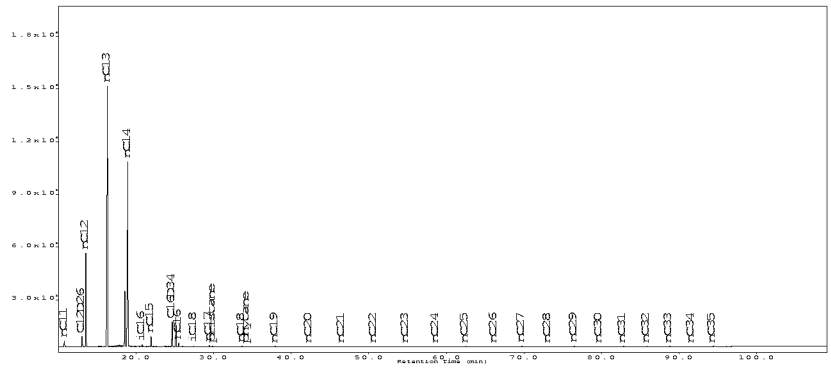
RockEval

S1	1,2
S2	7,1
PI	0,1
Tmax	332
TOC	2,0
HI	360
EOM wt%	0,3

δ13C fractions

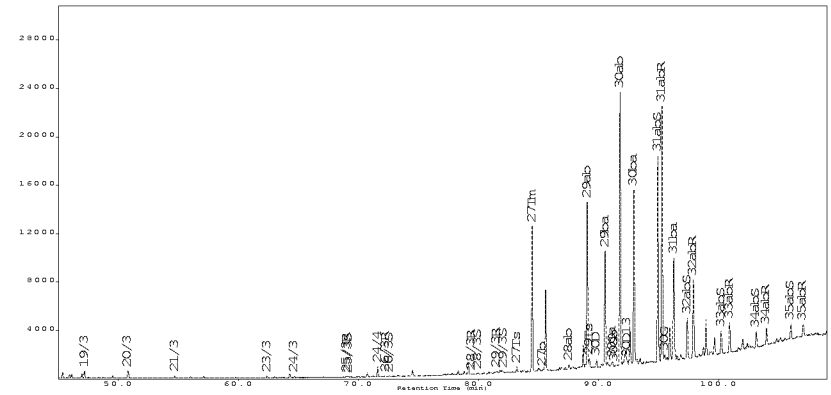
Sat.
Aro.
NSO
Asph.
EOM / Oil
Kerogen

C15+ SAT-fraction hydrocarbons, GC/FID:



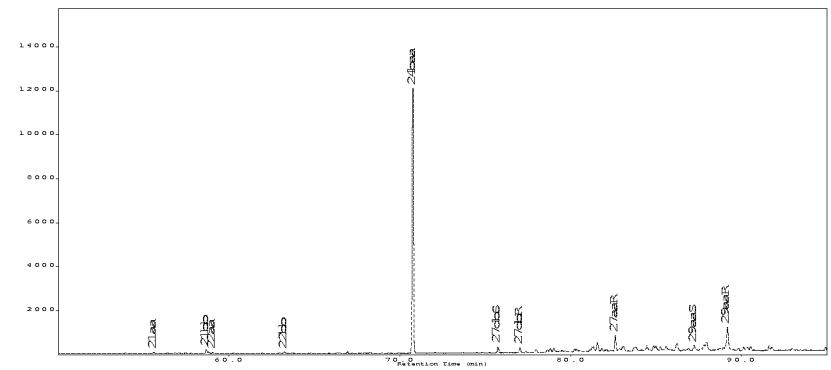
Parameter/amounts, ug/mg	
Pr/nC_{17}	0,6
Ph/nC_{18}	0,6
Pr/Ph	2,4
$nC_{17}/(C_{17}+C_{27})$	0,7
CPI2	1,8
nC_{17}	0,2
Pristane	0,1
ΣC15-C35	3

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	1,0
%20/3	47,9
%23/3	43,9
%24/4	83,1
C26/C25	1,1
%27Ts	3,4
%28αβ	2,5
%29Ts	5,0
%25nor30αβ	0,6
%29αβ	48,1
%30βα	38,8
%30D	4,0
%30G	2,6
%32αβS	34,1
%35αβ	45,1
30αβ	19,7
25nor30αβ	0,1
Σterpanes	134
%Pregnane	12,0
%29ααS	19,4
%29ββ	37,3
%27dia	49,5
%27ster. Norm	26,7
%28ster. Norm	23,7
%29ster. Norm	37,6
%30ster. Norm	12,0
Σsteranes	5
Hop/Ste	28,3

Steranes, m/z 217:

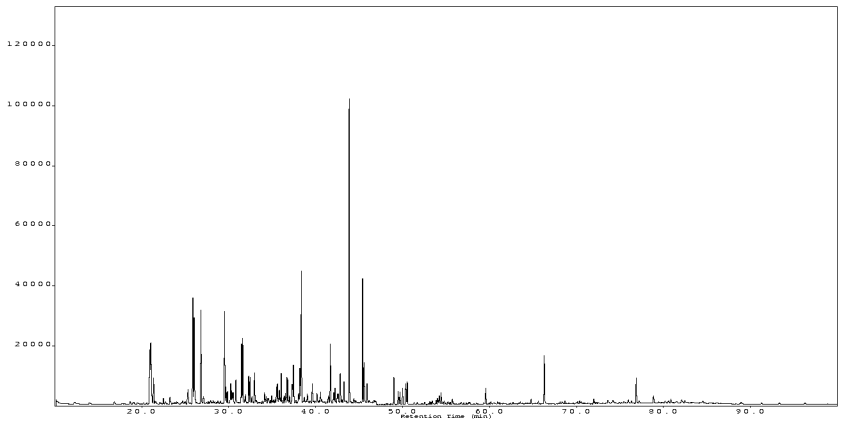


Country, well/location:	NOR, 1682984
Sample type, depth (m):	DC, 2839-2842 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: 2470448, PlanID: 692376	

Sediment sample

NYDRO
E&P Reserach Centre,
Bergen, Norway

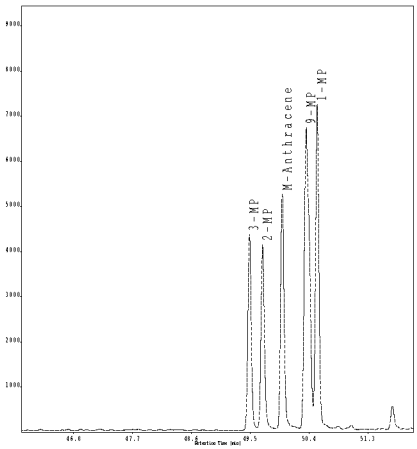
Aromatic hydrocarbons, TIC:



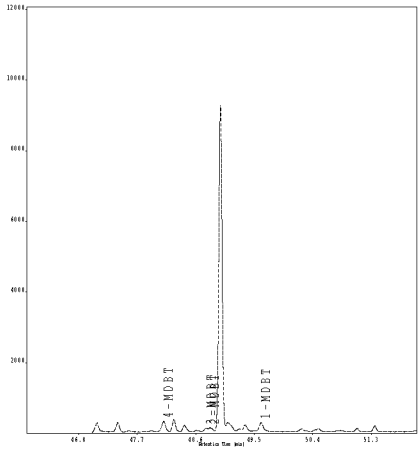
Parameter/amounts, ng/mg	
2/1MN	0,9
2/1EN	1,2
Phen.	14
MPI1	0,5
F1 (2+3/all MP)	0,4
F2 (2/all MP)	0,2
%TAS	39,6
DBT/P	0,0
F/P	0,7
BP/1.6DMN	0,5
4/1MDBT	1,2
3MP/R	1,1
ΣARO HC	96

Aromatic and Diamondoid hydrocarbons, GC/MS:

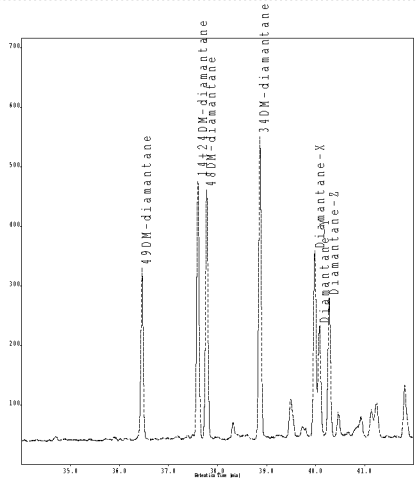
Dimethyl-phenanthrenes (m/z 192):



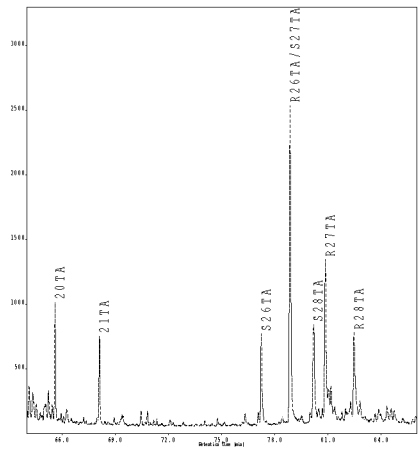
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



Parameter/amounts, ng/mg	
EAI%	50
DMDI%	64
%49DM-Diam.	24
%48DM-Diam.	34
%34DM-Diam.	42

Country, well/location:	NOR, 1682984
Sample type, depth (m):	SWC, 2851,5-2851,5 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

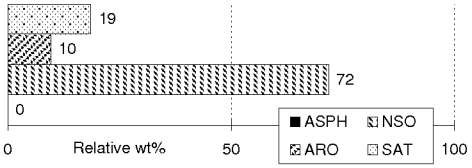
Sediment sample

HYDRO

E&P Reserach Centre, Bergen, Norway

OrgID: 2457497, PlanID: 689438

Iatroscan



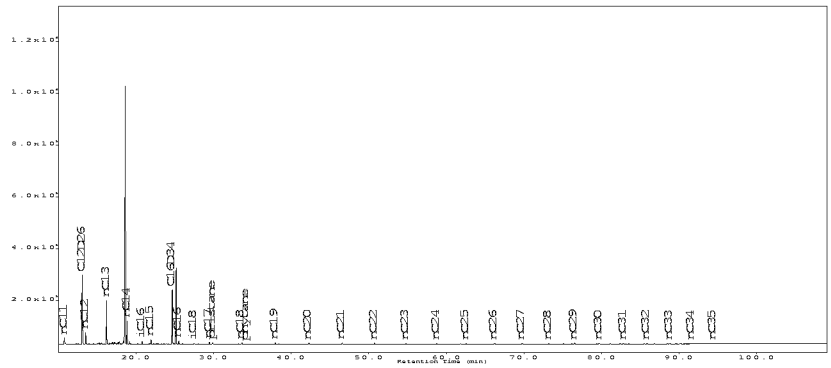
RockEval

S1	0,0
S2	1,0
PI	0,0
Tmax	432
TOC	0,8
HI	123
EOM wt%	0,1

δ13C fractions

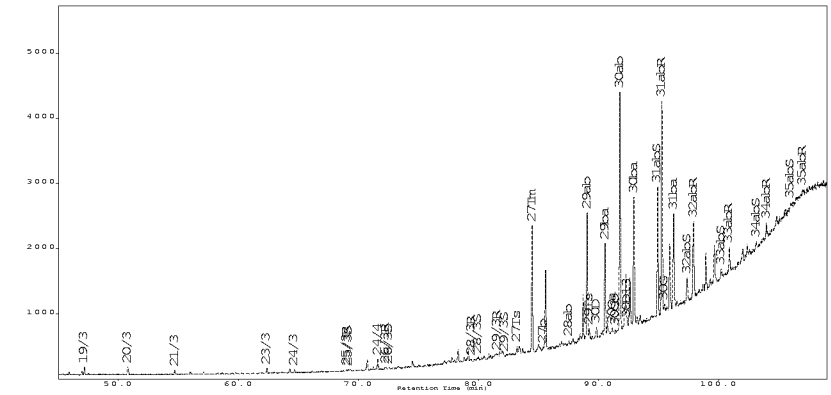
Sat.
Aro.
NSO
Asph.
EOM / Oil
Kerogen

C15+ SAT-fraction hydrocarbons, GC/FID:



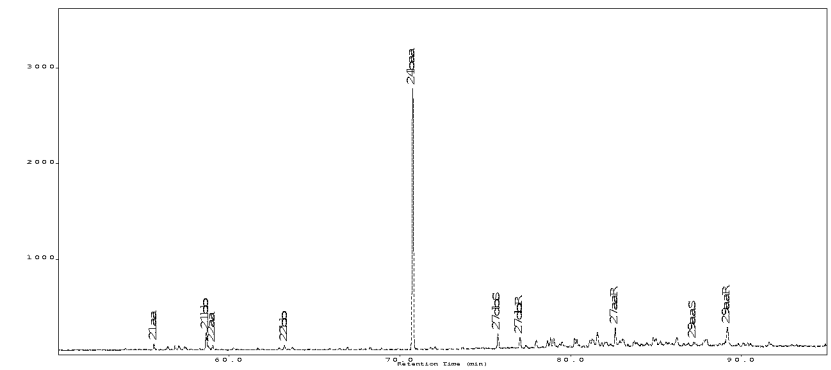
Parameter/amounts, ug/mg	
Pr/nC_{17}	1,3
Ph/nC_{18}	0,5
Pr/Ph	3,3
$nC_{17}/(C_{17}+C_{27})$	0,6
CPI2	1,1
nC_{17}	0,1
Pristane	0,1
ΣC15-C35	2

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	2,4
%20/3	29,9
%23/3	55,7
%24/4	70,1
C26/C25	1,5
%27Ts	6,4
%28αβ	3,0
%29Ts	8,3
%25nor30αβ	1,3
%29αβ	44,7
%30βα	34,7
%30D	6,5
%30G	5,7
%32αβS	25,7
%35αβ	36,9
30αβ	14,8
25nor30αβ	0,2
Σterpanes	91

Steranes, m/z 217:



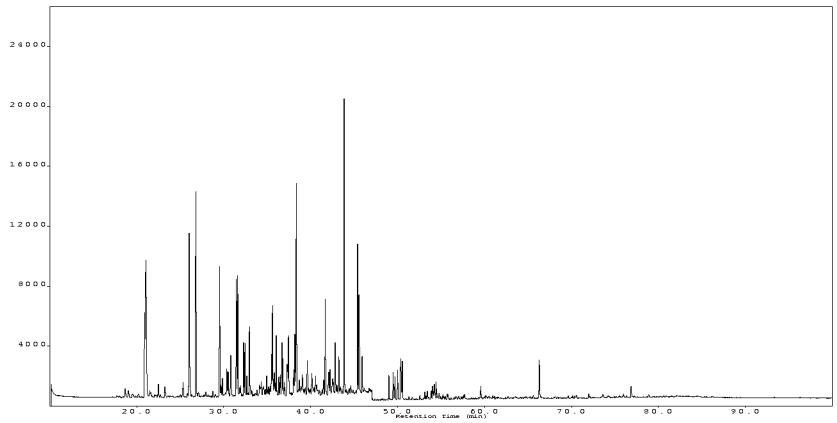
%Pregnane	30,2
%29ααS	18,6
%29ββ	42,5
%27dia	62,8
%27ster. Norm	30,8
%28ster. Norm	28,3
%29ster. Norm	31,0
%30ster. Norm	9,9
Σsteranes	7
Hop/Ste	12,6

Country, well/location:	NOR, 1682984
Sample type, depth (m):	SWC, 2851,5-2851,5 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: 2457497, PlanID: 689438	

Sediment sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

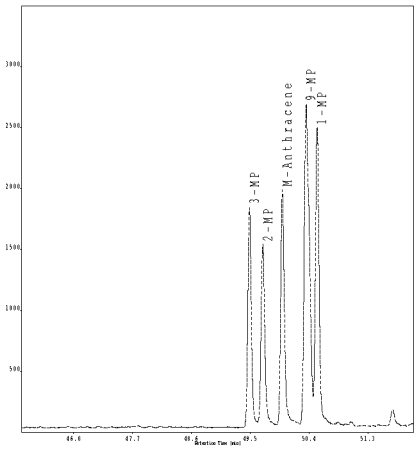
Aromatic hydrocarbons, TIC:



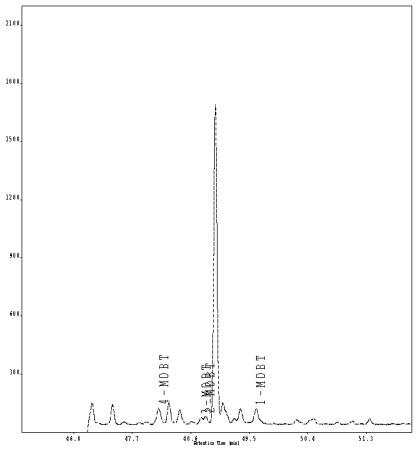
Parameter/amounts, ng/mg	
2/1MN	0,8
2/1EN	1,2
Phen.	29
MPI1	0,5
F1 (2+3/all MP)	0,4
F2 (2/all MP)	0,2
%TAS	66,7
DBT/P	0,0
F/P	0,4
BP/1.6DMN	0,2
4/1MDBT	1,1
3MP/R	2,8
ΣARO HC	138

Aromatic and Diamondoid hydrocarbons, GC/MS:

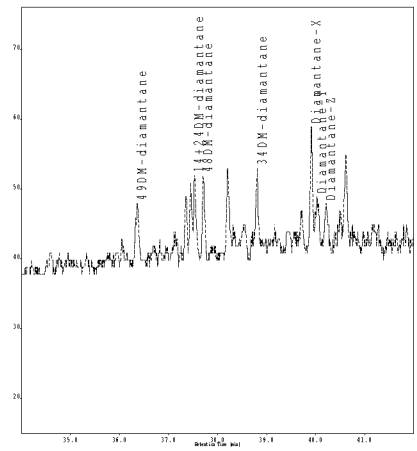
Dimethyl-phenanthrenes (m/z 192):



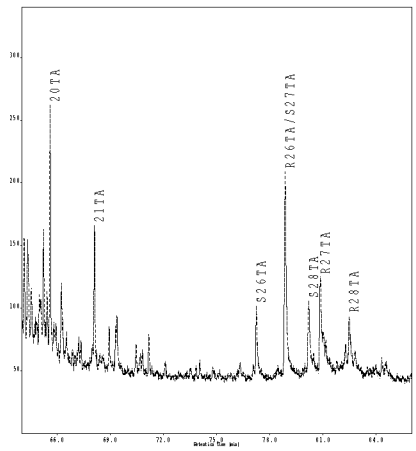
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



Parameter/amounts, ng/mg	
EAI%	63
DMDI%	55
%49DM-Diam.	28
%48DM-Diam.	38
%34DM-Diam.	34

Country, well/location:	NOR, 1682984
Sample type, depth (m):	DC, 2863-2866 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	

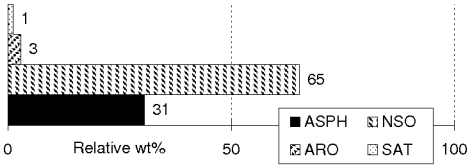
Sediment sample

HYDRO

E&P Reserach Centre, Bergen, Norway

OrgID: 2470453, PlanID: 692380

Iatroscan



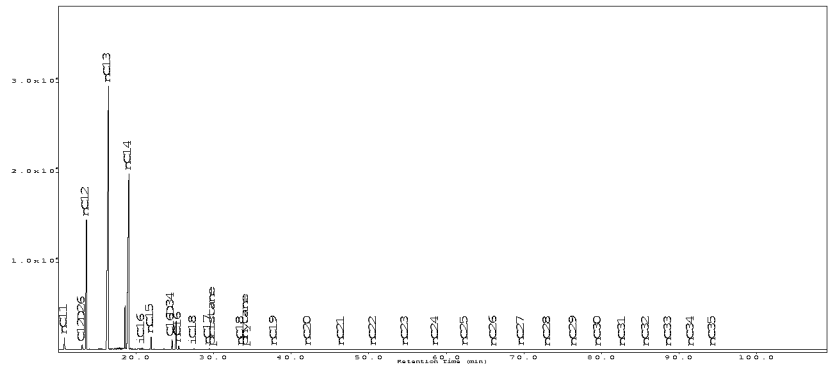
RockEval

S1	2,3
S2	8,4
PI	0,2
Tmax	346
TOC	1,5
HI	548
EOM wt%	0,2

δ13C fractions

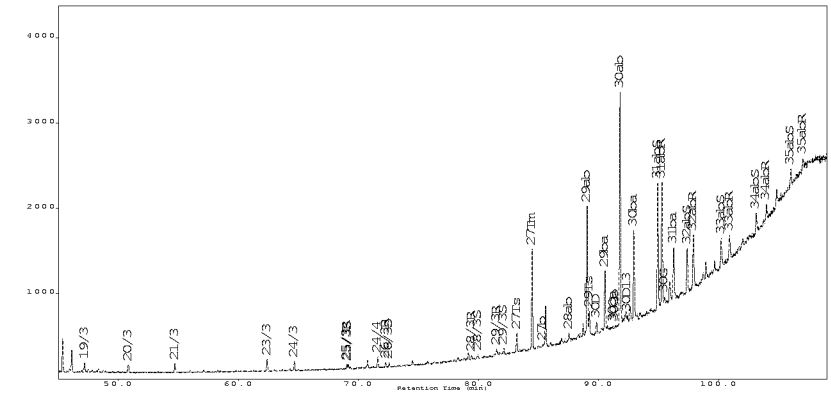
Sat.
Aro.
NSO
Asph.
EOM / Oil
Kerogen

C15+ SAT-fraction hydrocarbons, GC/FID:



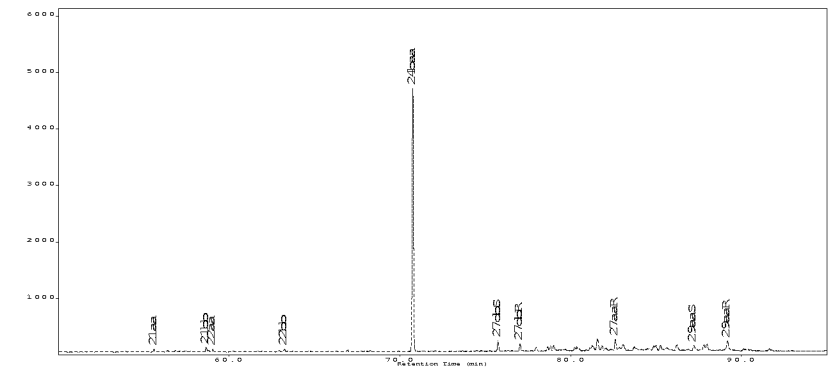
Parameter/amounts, ug/mg	
Pr/nC_{17}	0,2
Ph/nC_{18}	0,5
Pr/Ph	1,0
$nC_{17}/(C_{17}+C_{27})$	0,9
CPI2	1,0
nC_{17}	0,4
Pristane	0,1
ΣC15-C35	7

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	5,2
%20/3	13,6
%23/3	46,4
%24/4	44,9
C26/C25	1,1
%27Ts	16,2
%28αβ	6,0
%29Ts	14,7
%25nor30αβ	1,5
%29αβ	45,7
%30βα	28,0
%30D	8,2
%30G	4,3
%32αβS	46,0
%35αβ	45,3
30αβ	6,5
25nor30αβ	0,1
Σterpanes	39

Steranes, m/z 217:



%Pregnane	12,2
%29ααS	36,4
%29ββ	54,3
%27dia	51,5
%27ster. Norm	33,8
%28ster. Norm	24,7
%29ster. Norm	32,3
%30ster. Norm	9,1
Σsteranes	6
Hop/Ste	6,0

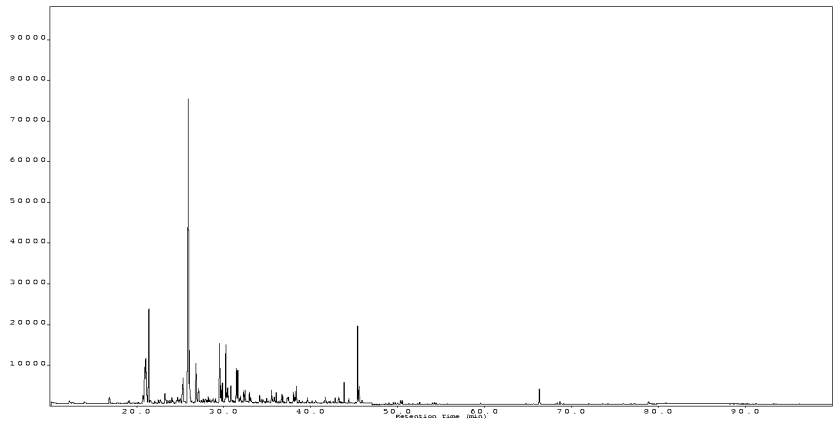
Country, well/location:	NOR, 1682984
Sample type, depth (m):	DC, 2863-2866 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: 2470453, PlanID: 692380	

Sediment sample

NYDRO

E&P Reserach Centre, Bergen, Norway

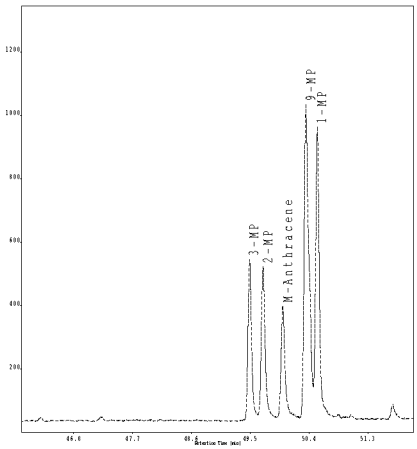
Aromatic hydrocarbons, TIC:



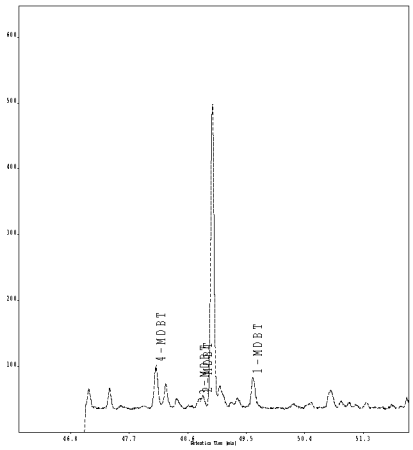
Parameter/amounts, ng/mg	
2/1MN	1,2
2/1EN	1,5
Phen.	9
MPI1	0,3
F1 (2+3/all MP)	0,3
F2 (2/all MP)	0,2
%TAS	43,5
DBT/P	0,0
F/P	0,3
BP/1.6DMN	1,4
4/1MDBT	1,5
3MP/R	1,8
ΣARO HC	53

Aromatic and Diamondoid hydrocarbons, GC/MS:

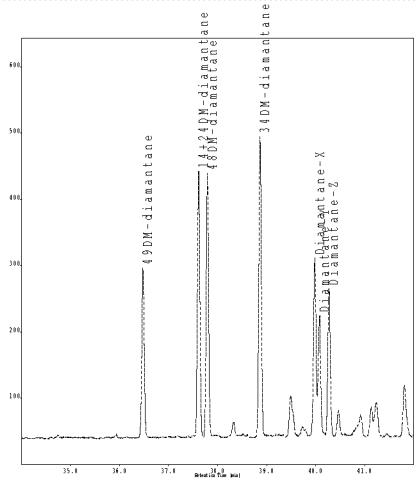
Dimethyl-phenanthrenes (m/z 192):



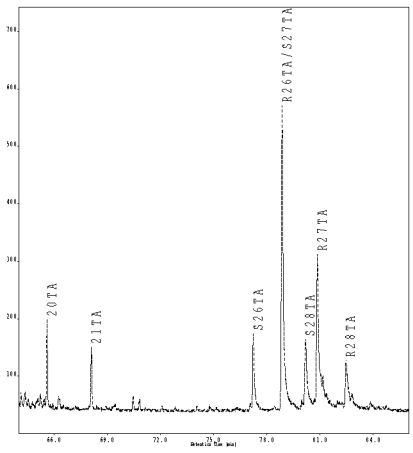
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



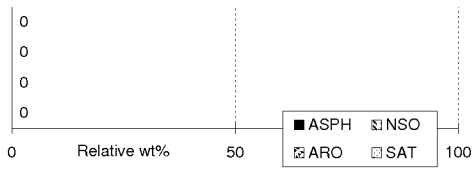
Parameter/amounts, ng/mg	
EAI%	44
DMDI%	64
%49DM-Diam.	23
%48DM-Diam.	36
%34DM-Diam.	41

Country, well/location:	NOR, 1682984
Sample type, depth (m):	MUD, 2900-2900 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: 2473252, PlanID: 692773	

Fluid sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

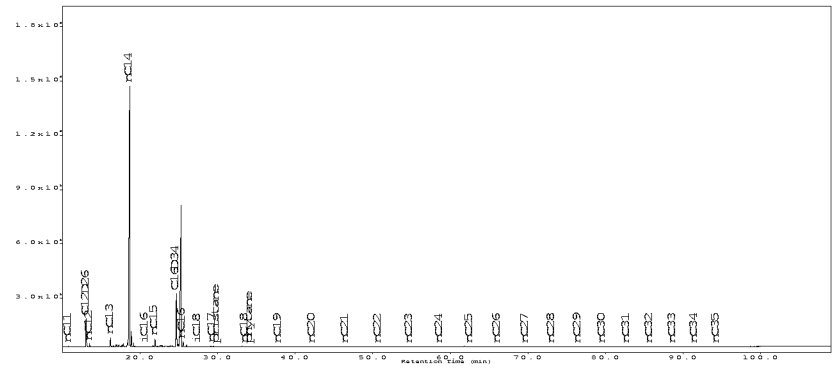
Iatroscan



δ13C fractions

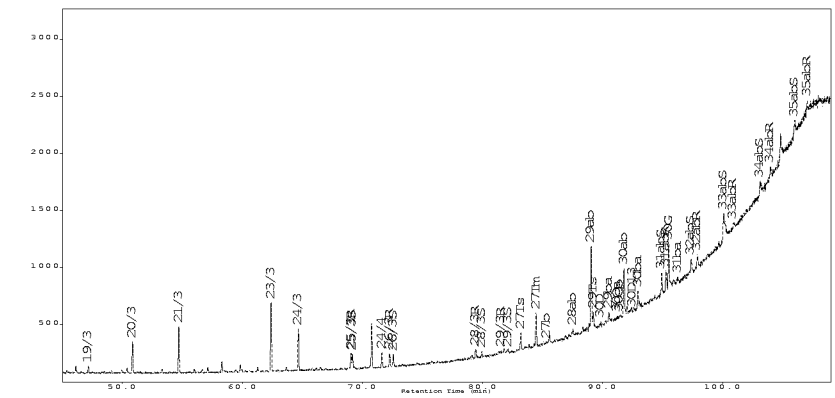
Sat.
Aro.
NSO
Asph.
EOM / Oil

C15+ SAT-fraction hydrocarbons, GC/FID:



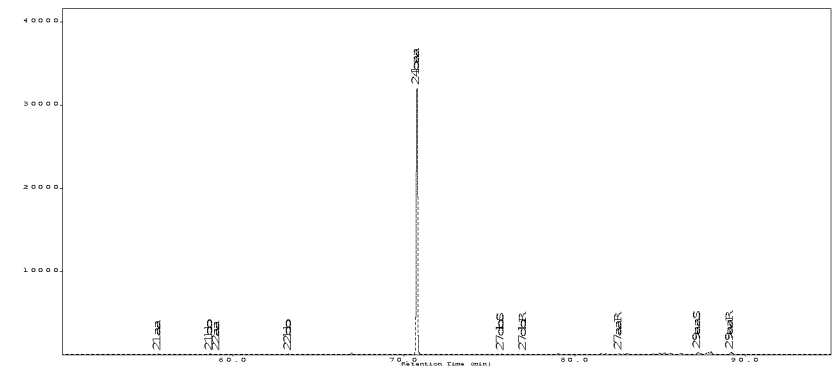
Parameter/amounts, µg/mg	
Pr/nC_{17}	0,0
Ph/nC_{18}	0,0
Pr/Ph	
$nC_{17}/(C_{17}+C_{27})$	1,0
CPI2	
nC_{17}	0,0
Pristane	0,0
ΣC15-C35	1

Terpanes, m/z 191:



Parameter/amounts, ng/mg	
%Tri	39,50
%20/3	12,6
%23/3	54,4
%24/4	21,2
C26/C25	0,9
%27Ts	34,8
%28αβ	17,6
%29Ts	16,3
%25nor30αβ	12,5
%29αβ	72,0
%30βα	26,3
%30D	12,5
%30G	60,0
%32αβS	50,0
%35αβ	50,0
30αβ	0,1
25nor30αβ	0,0
Σterpanes	2
%Pregnane	8,9
%29ααS	54,3
%29ββ	66,0
%27dia	36,8
%27ster. Norm	10,7
%28ster. Norm	26,8
%29ster. Norm	60,7
%30ster. Norm	1,8
Σsteranes	1
Hop/Ste	1,3

Steranes, m/z 217:

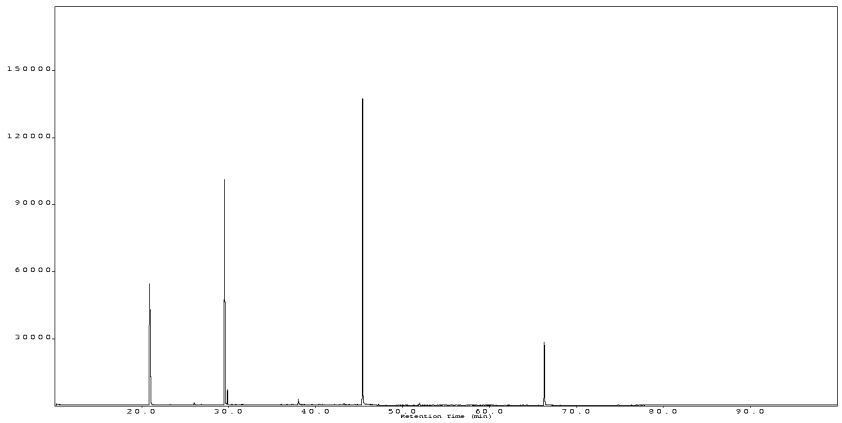


Country, well/location:	NOR, 1682984
Sample type, depth (m):	MUD, 2900-2900 m MD RKB
Stratigraphy (Gr./Fm.):	
Mud system:	
Remarks:	
OrgID: 2473252, PlanID: 692773	

Fluid sample

HYDRO
E&P Reserach Centre,
Bergen, Norway

Aromatic hydrocarbons, TIC:

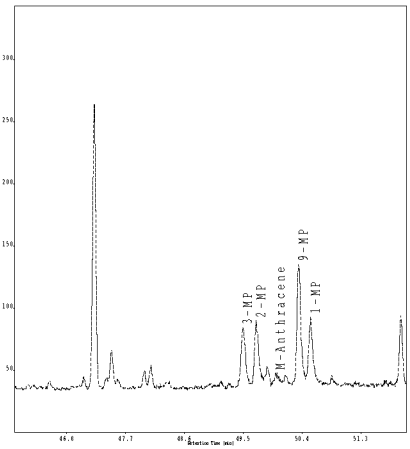


Parameter/amounts, ng/mg

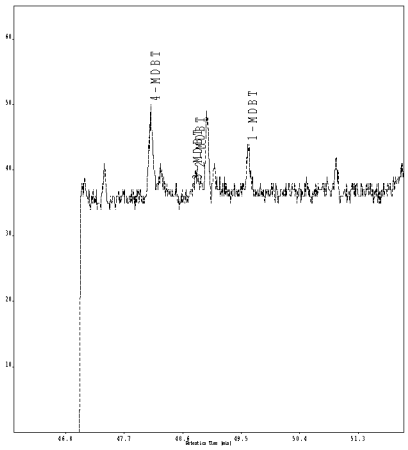
2/1MN	2,13
2/1EN	3,00
Phen.	0
MPI1	0,46
F1 (2+3/all MP)	0,40
F2 (2/all MP)	0,20
%TAS	50
DBT/P	0,00
F/P	0,43
BP/1.6DMN	2,67
4/1MDBT	
3MP/R	0,67
ΣARO HC	0

Aromatic and Diamondoid hydrocarbons, GC/MS:

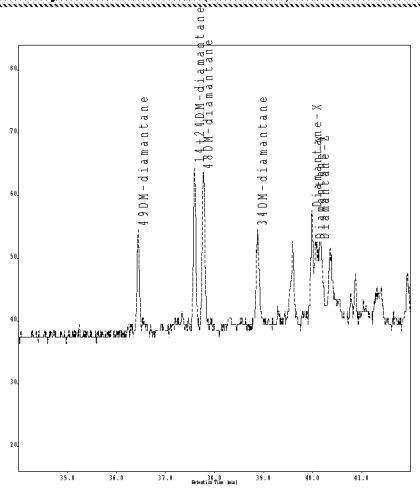
Dimethyl-phenanthrenes (m/z 192):



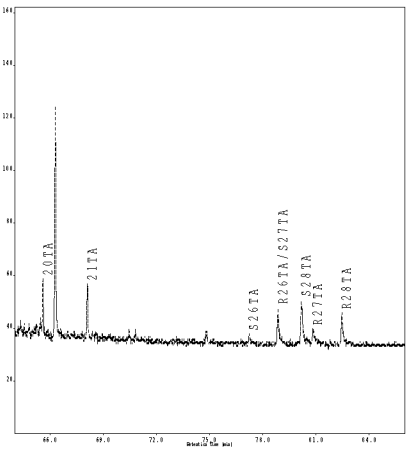
Methyl-dibenzothiophenes (m/z 198):



Dimethyl-diamantanes (m/z 201):



Triaromatic steroids (m/z 231):



Parameter/amounts, ng/mg

EAI%	55,6
DMDI%	50,0
%49DM-Diam.	27,6
%48DM-Diam.	44,8
%34DM-Diam.	27,6

APPENDIX II

Vitrinite reflectance

Data report
Vitrinite Reflectance Analysis, Well 6507/11-7

Applied Petroleum Technology AS
P. O. Box 123
2027 Kjeller
Norway

Address:	Applied Petroleum Technology AS P.O.Box 123 2027 Kjeller
Telephone:	+47 63 80 60 00
Telefax:	+47 63 80 11 38

Report number APT07-1282	Classification Confidential
Report Title Data report - Vitrinite Reflectance Analysis, Well 6507/11-7	Submitted 15.06.2007
Client Norsk Hydro ASA	Service Order 5399253
Client Reference Vibeke Hatlø	Number of pages 35
Distribution Norsk Hydro ASA (digital) APT (digital)	

Author
Per Erling Johansen

	Name	Date	Signature
Reviewed by	Geir Hansen	2007-06-14	
Approved by	Tore Haaland	2007-06-14	

CONTENTS

Table 1. Number of analyses performed

Analysis	Cuttings	Total
Vitrinite reflectance	30	30

Table 2. Vitrinite Reflectance

Well	Sample type	Upper Depth (m)	Lower Depth (m)	APT ID	Sample prep	%Lithology	%Ro	Std. dev.	No. of measurements	Quality rating	Overall quality	Comment
6507/11-7	DC	1000	1010	39461	HF	slst	0.55	0.06	7	o+o-oo	M	See data sheet
6507/11-7	DC	1100	1110	39462	HF	slst	0.39	0.05	7	-ooo-+	M	See data sheet
6507/11-7	DC	1190	1200	39463	HF	lst	0.31	0.00	1	--o-oo	P	See data sheet
6507/11-7	DC	1280	1290	39464	HF	lst	0.52	0.02	7	oo--oo	M	See data sheet
6507/11-7	DC	1390	1400	39465	HF	lst	0.67	0.04	7	o+o-oo	M	See data sheet
6507/11-7	DC	1490	1500	39466	HF	sh	barren					See data sheet
6507/11-7	DC	1590	1600	39467	HF	sh	0.55	0.10	8	oooo-+	M	See data sheet
6507/11-7	DC	1690	1700	39468	HF	lst	0.48	0.07	8	ooo-oo	M	See data sheet
6507/11-7	DC	1730	1740	39469	HF	sh	0.47	0.05	17	ooo--+	M	See data sheet
6507/11-7	DC	1790	1800	39470	HF	sh	0.44	0.03	13	o-o-o+	M	See data sheet
6507/11-7	DC	1890	1900	39471	HF	clyst	0.53	0.01	2	++oooo	P	See data sheet
6507/11-7	DC	1990	2000	39472	HF	slst	0.53	0.03	4	-oo-oo	M	See data sheet
6507/11-7	DC	2030	2040	39473	HF	slst	0.51	0.12	2	--ooo+	P	See data sheet
6507/11-7	DC	2050	2060	39474	HF	Sh	0.39	0.03	11	o---o+	P	See data sheet
6507/11-7	DC	2090	2100	39475	HF	lst	0.78	0.05	6	++o-oo	M	See data sheet
6507/11-7	DC	2190	2200	39476	HF	sh	0.58	0.01	5	++oooo	M	See data sheet
6507/11-7	DC	2220	2230	39477	HF	sh	0.85	0.08	14	o+o+oo	M	See data sheet
6507/11-7	DC	2240	2250	39478	HF	sh	0.81	0.08	9	o++-oo	M	See data sheet
6507/11-7	DC	2290	2300	39479	HF	sh	0.70	0.05	13	o+o-o+	M	See data sheet
6507/11-7	DC	2390	2400	39480	HF	sh	0.78	0.06	9	o+ooo+	G	See data sheet
6507/11-7	DC	2490	2500	39481	HF	lst	0.54	0.08	16	oo--oo	M	See data sheet
6507/11-7	DC	2500	2510	39482	HF	lst	0.69	0.07	12	oo--oo	M	See data sheet
6507/11-7	DC	2510	2520	39483	HF	sh	0.57	0.05	11	ooo-o+	G	See data sheet
6507/11-7	DC	2590	2600	39484	HF	sh	0.61	0.08	10	ooo-o+	G	See data sheet
6507/11-7	DC	2695	2698	39485	HF	sh	0.56	0.05	7	o-ooo+	M	See data sheet
6507/11-7	DC	2760	2770	39486	HF	sh	0.70	0.05	6	ooo-o+	M	See data sheet
6507/11-7	DC	2788	2791	39487	HF	sh	0.76	0.01	2	+oooo+	M	See data sheet
6507/11-7	DC	2848	2851	39488	HF	sh	0.63	0.11	10	o-ooo+	M	See data sheet
6507/11-7	DC	2902	2905	39489	HF	sh	0.74	0.01	4	-ooooo	M	See data sheet
6507/11-7	DC	2941	2944	39490	HF	slst	0.79	0.08	8	o-o-o+	M	See data sheet

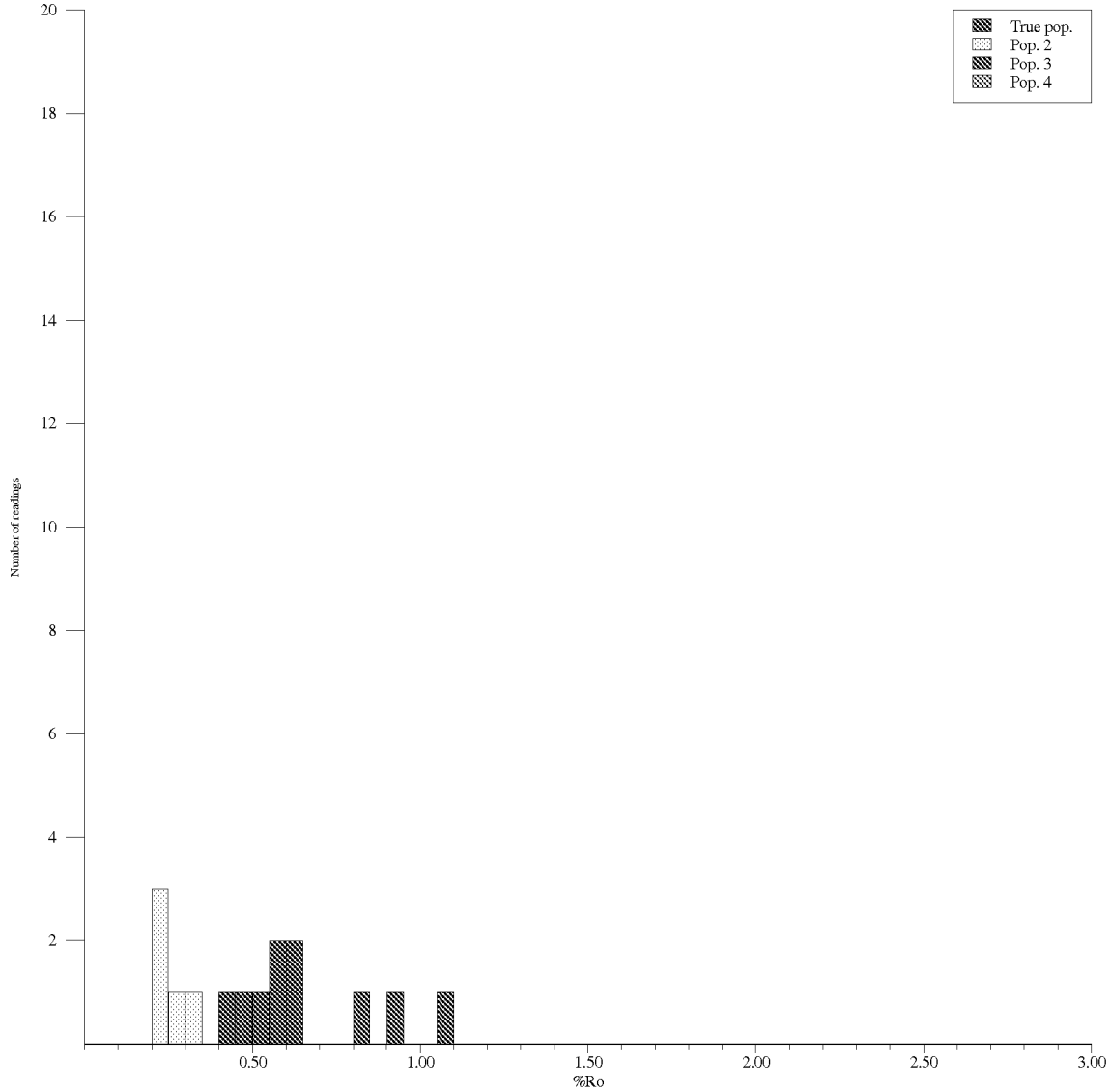
Legend to Vitrinite reflectance data

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	6507/11-7
Lower depth	1010
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39461

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	+
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.	0.55±0.06	0.25±0.06	0.94±0.12	
Individual measurements	0.442	0.202	0.836	
	0.497	0.206	0.927	
3	0.531	0.211	1.069	
4	0.567	0.276		
5	0.586	0.348		
6	0.603			
7	0.620			
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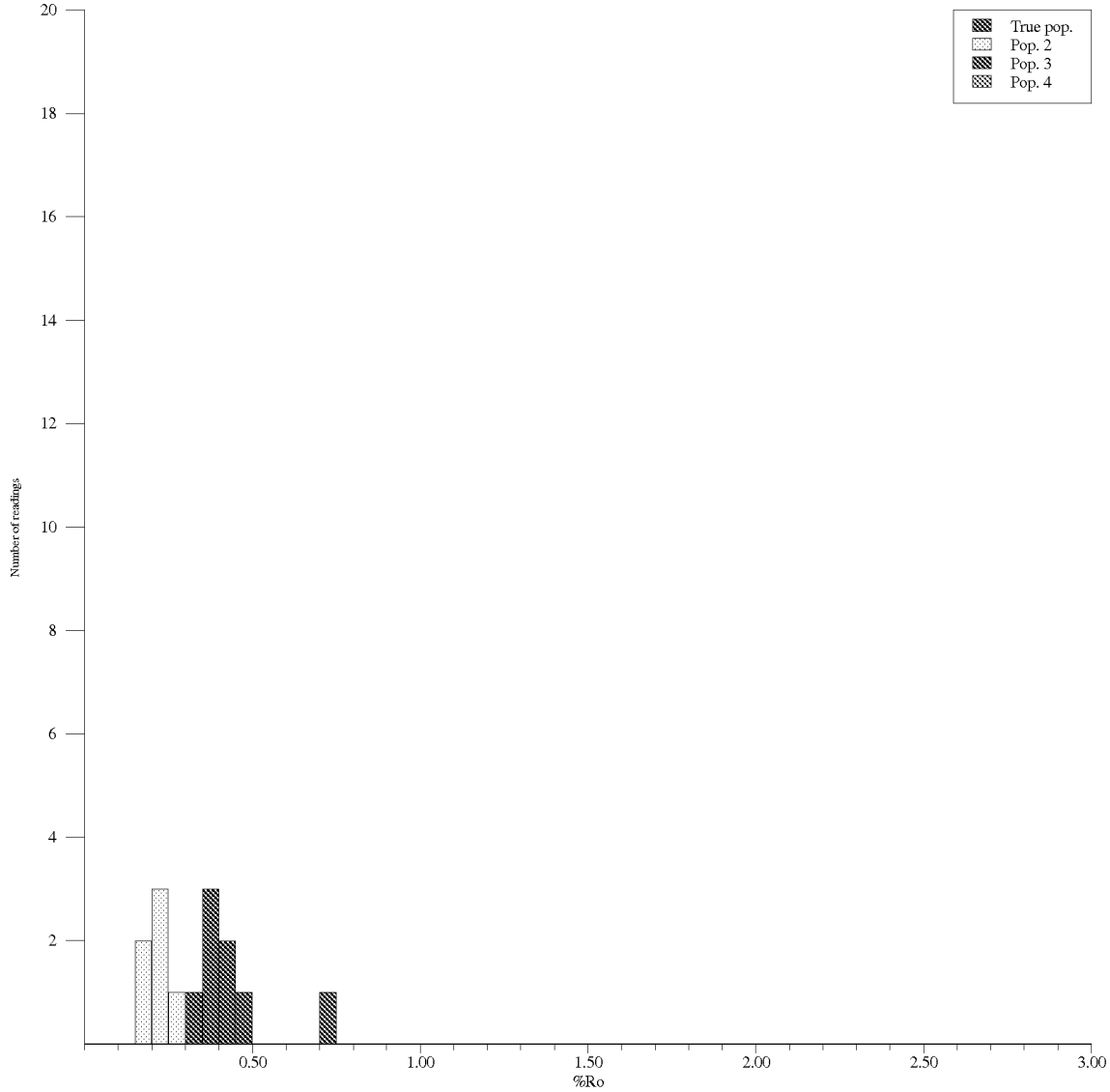
Comments:
Siltstone is dominated by inertinite with significant bitumen spheres and immature vitrinite. Yellow/yellow-orange spores fluorescence; yellow mineral florescence. Significant reworked vitrinite.



Sample info:	
Well	6507/11-7
Lower depth	1110
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39462

Quality rating:	
Average sample quality	M
Abundance of vitrinite	-
Identification of vitrinite	o
Type of vitrinite	o
Particle size	o
Particle surface quality	-
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.	0.39±0.05	0.23±0.04	0.72±0.00	
Individual	0.322	0.192	0.716	
measurements	0.361	0.199		
3	0.369	0.211		
4	0.398	0.219		
5	0.403	0.246		
6	0.447	0.295		
7	0.457			
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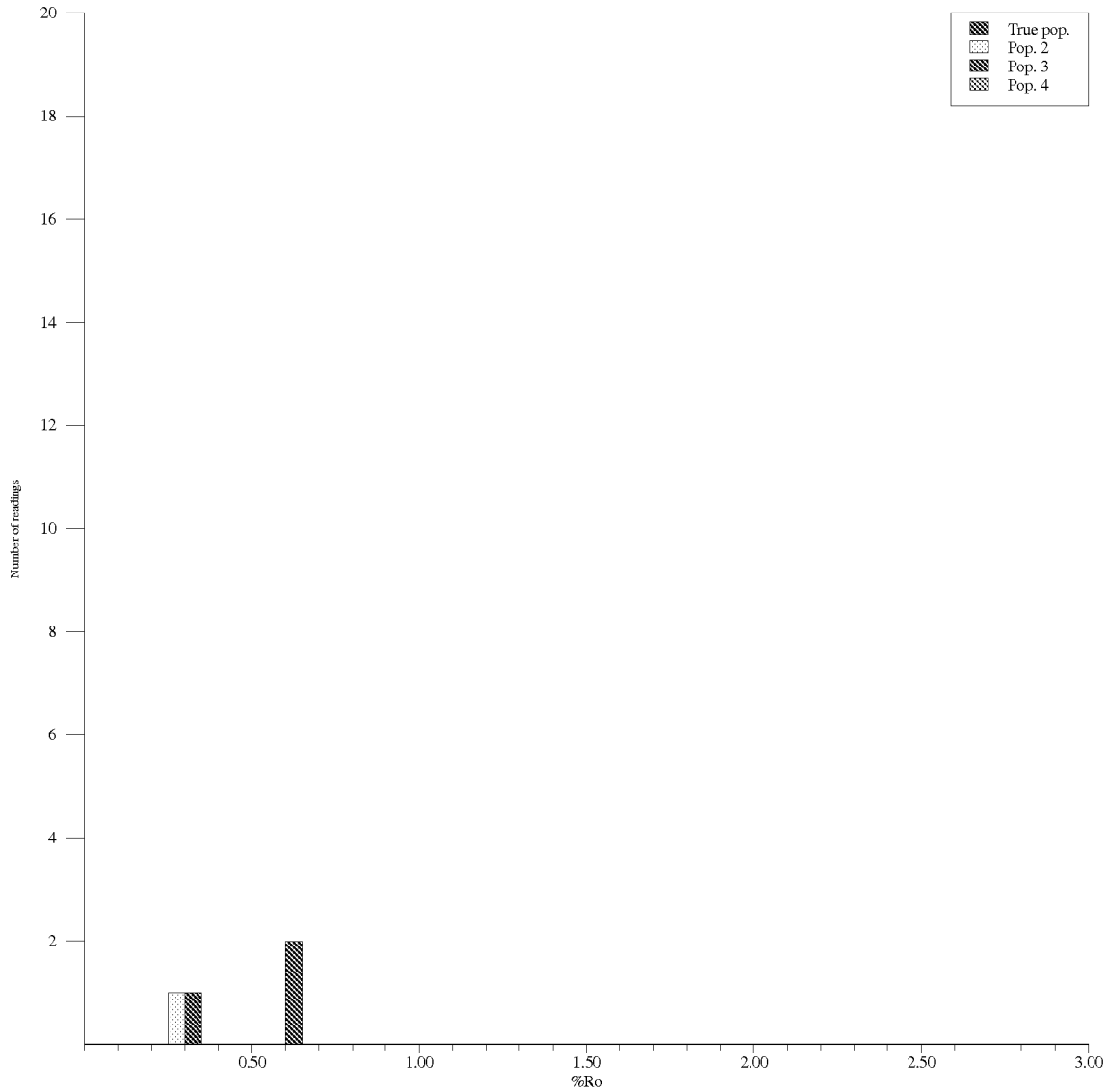
Comments:
Siltstone has a low organic matter content that is dominated by inertinite and vitrinite with significant bitumen streaks but trace bitumen staining. Significant pyrite. Very weak yellow spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1200
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39463

Quality rating:	
Average sample quality	P
Abundance of vitrinite	-
Identification of vitrinite	-
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.	0.31±0.00	0.26±0.00	0.62±0.01	
Individual measurements	0.312	0.258	0.618 0.631	
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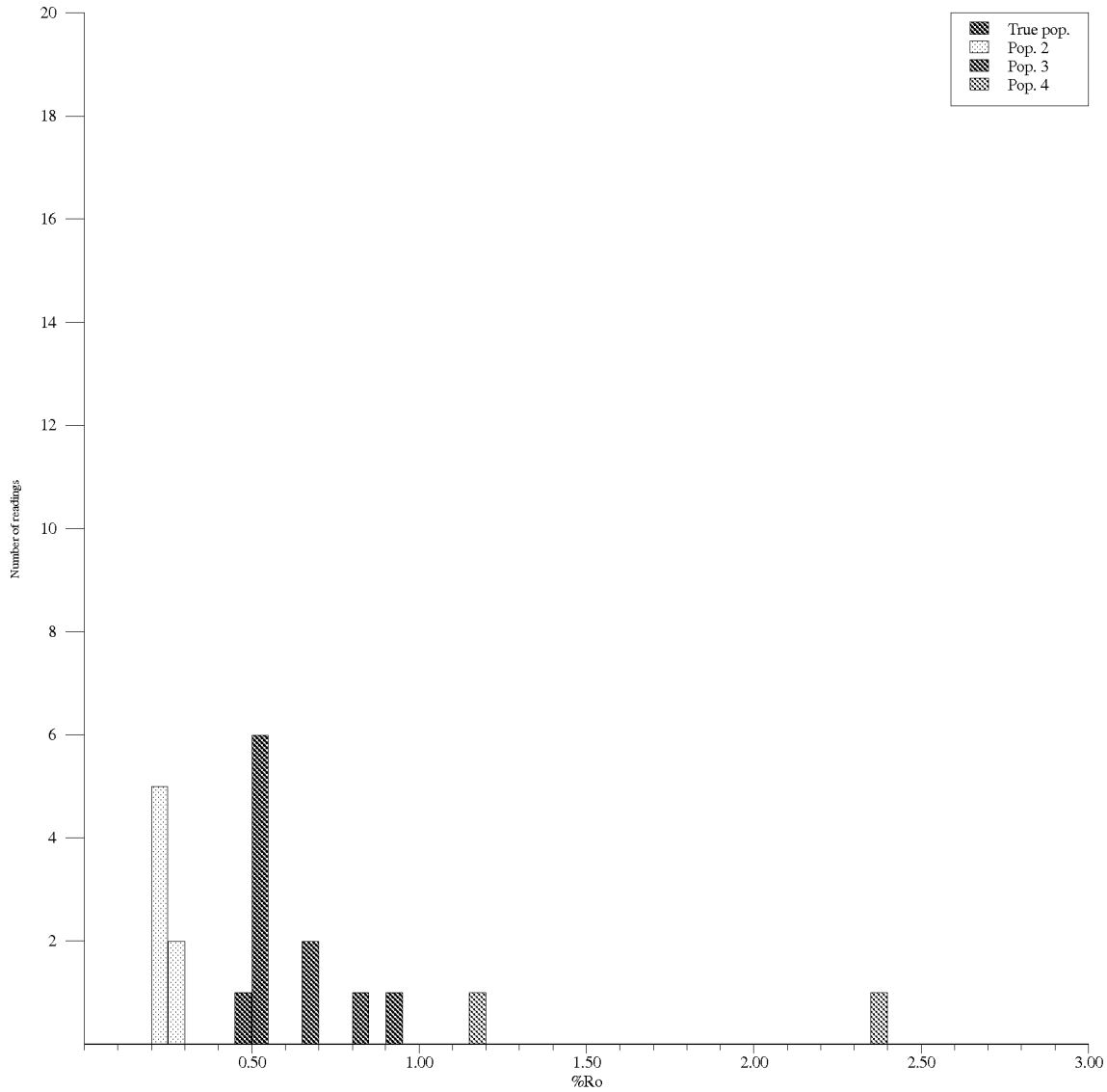
Comments:
Marl is virtually barren, traces of inertinite and vitrinite. Differentiation is difficult. Yellow algal; yellow-orange to light orange spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1290
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39464

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.	0.52±0.02	0.24±0.03	0.78±0.11	1.77±0.84
Individual	0.494	0.205	0.689	1.178
measurements	0.509	0.208	0.694	2.367
3	0.518	0.213	0.829	
4	0.521	0.232	0.920	
5	0.526	0.234		
6	0.528	0.275		
7	0.542	0.287		
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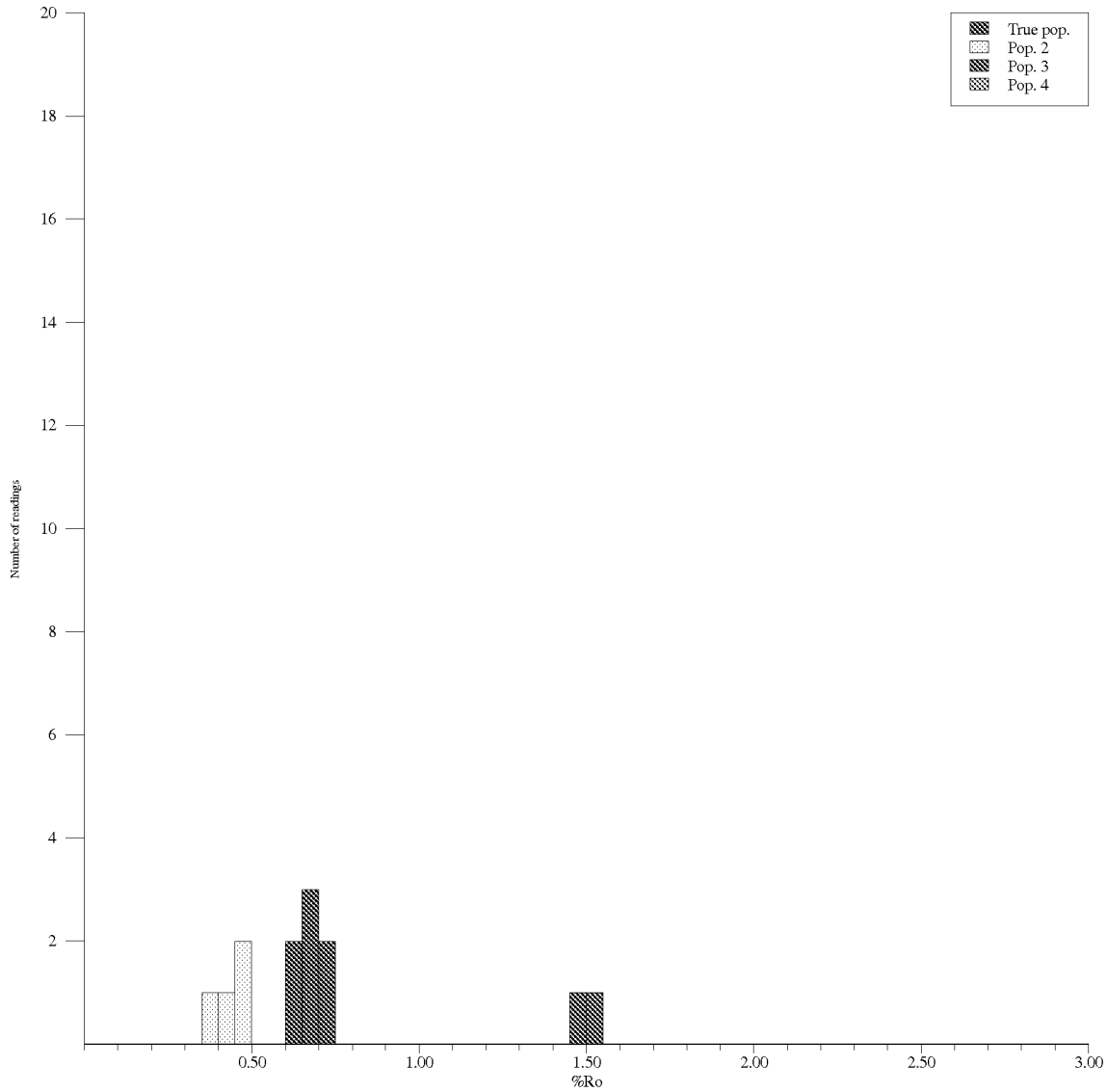
Comments:
Scattered blocky reworked particles are dominant in a white marl. Significant inertinite and vitrinite; some lignite contaminants. Weak dark red matrix bitumen fluorescence yellow-orange weak spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1400
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39465

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	+
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.	0.67±0.04	0.43±0.04	1.49±0.03	
Individual	0.622	0.378	1.476	
measurements	0.641	0.426	1.512	
3	0.668	0.450		
4	0.668	0.458		
5	0.677			
6	0.718			
7	0.725			
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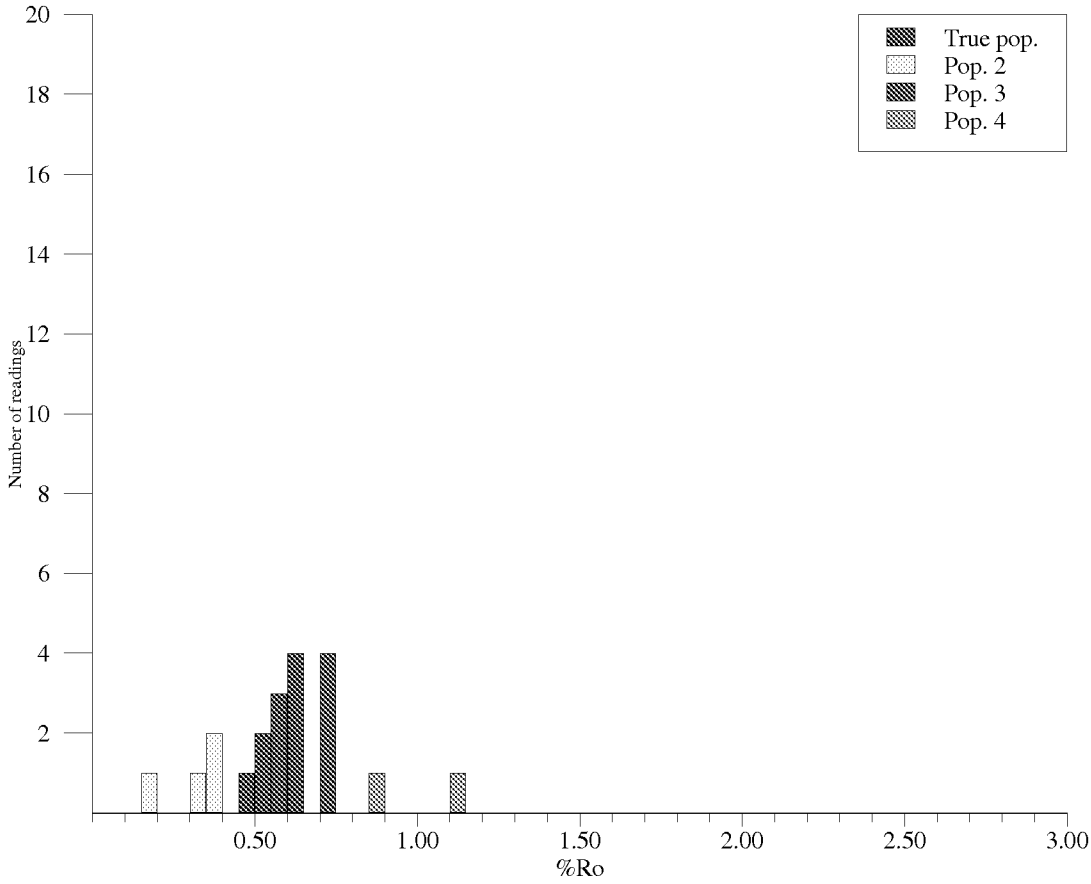
Comments:
Marl with trace to low organic matter content, occasional bitumen globules and areas of bitumen staining. Particles are small and dominated by inertinite and vitrinite. Differentiation often difficult. No spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1500
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39466

Quality rating:	
Average sample quality	G
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.	0.57±0.05	0.31±0.08	0.73±0.02	0.98±0.17
Individual	0.489	0.187	0.715	0.865
measurements	0.517	0.319	0.728	1.101
3	0.530	0.360	0.746	
4	0.565	0.367	0.748	
5	0.570			
6	0.573			
7	0.614			
8	0.619			
9	0.626			
10	0.631			
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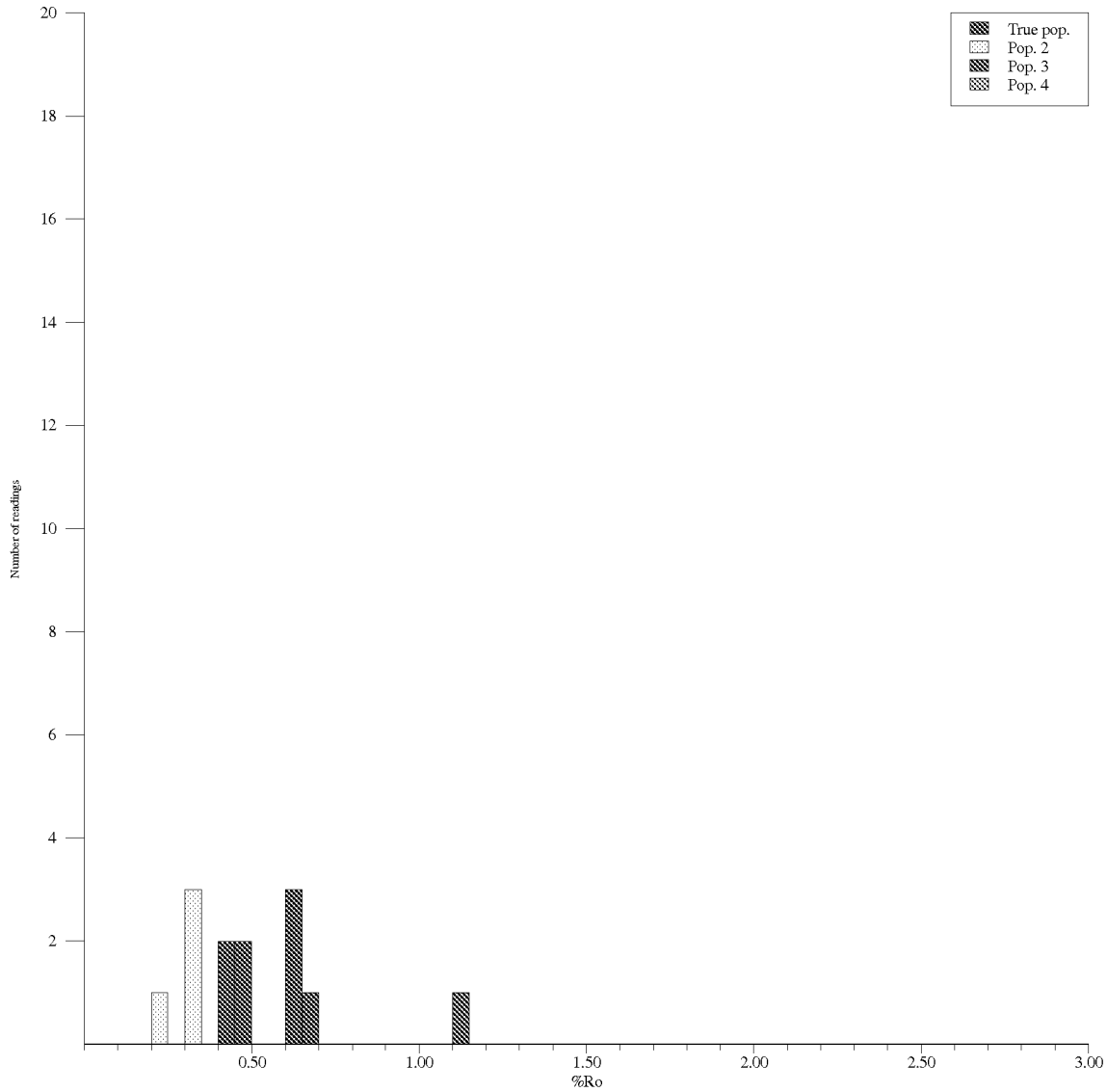
Comments:
Shale has a low organic matter content dominated by inertinite with significant vitrinite and bitumen streaks and moderately strong hydrocarbon staining. Weak yellow algal and yellow-orange to light orange spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1600
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39467

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	o
Particle surface quality	-
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.	0.55±0.10	0.30±0.05	1.14±0.00	
Individual measurements	0.438	0.227	1.136	
3	0.445	0.308		
4	0.460	0.310		
5	0.470	0.345		
6	0.604			
7	0.641			
8	0.649			
9	0.658			
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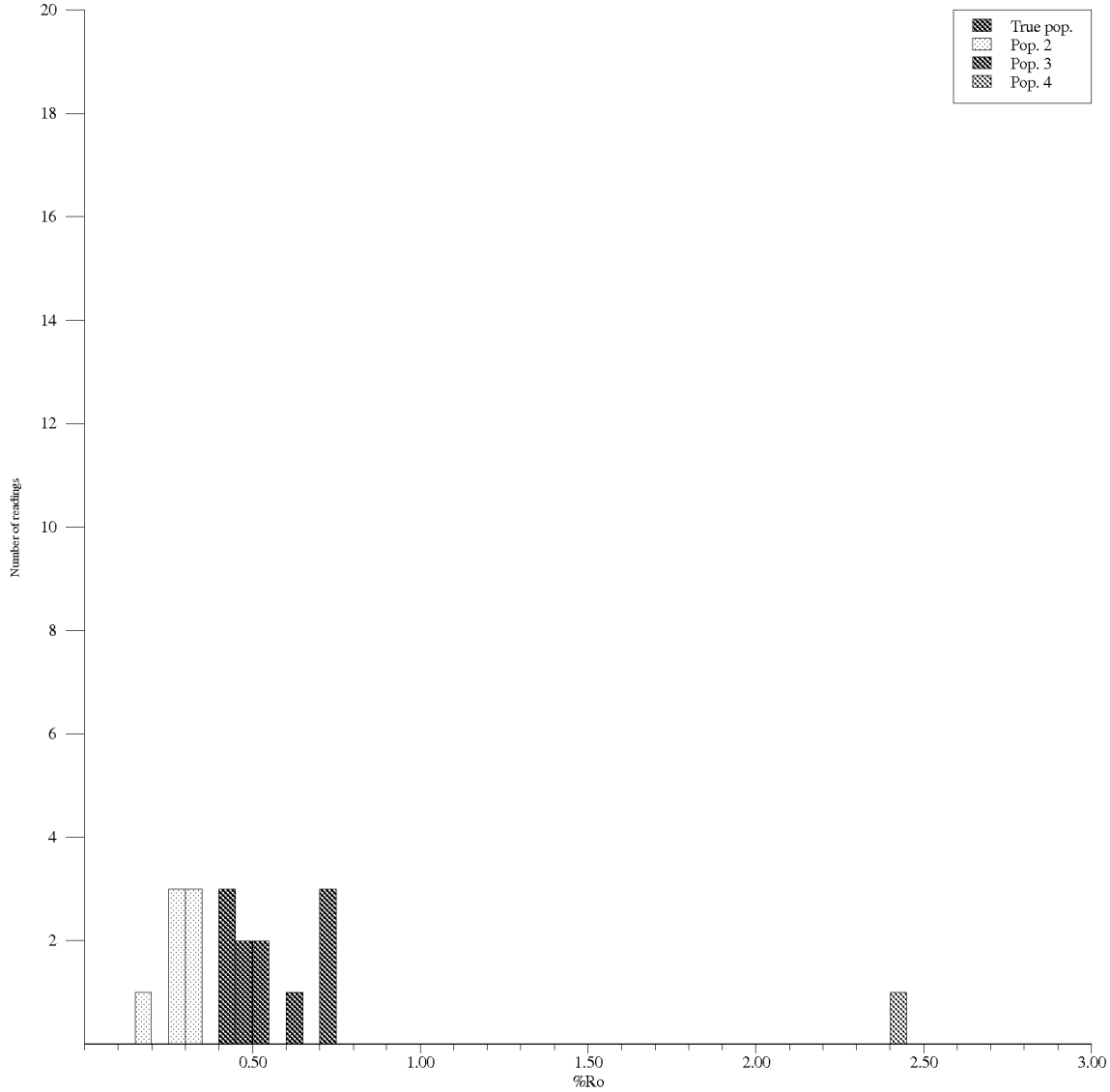
Comments:
Silty shale has a moderate organic matter content that is dominated by inertinite with minor vitrinite. Fairly pyritic. Abundant bitumen streaks and staining, occasional graphite. Yellow algal YO-LO spore fluorescence; vitrinite dark red.



Sample info:	
Well	6507/11-7
Lower depth	1700
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39468

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.	0.48±0.07	0.28±0.05	0.73±0.01	2.45±0.00
Individual measurements	0.416	0.193	0.716	2.448
3	0.421	0.269	0.741	
4	0.428	0.276	0.741	
5	0.458	0.283		
6	0.480	0.315		
7	0.514	0.315		
8	0.519	0.325		
9	0.625			
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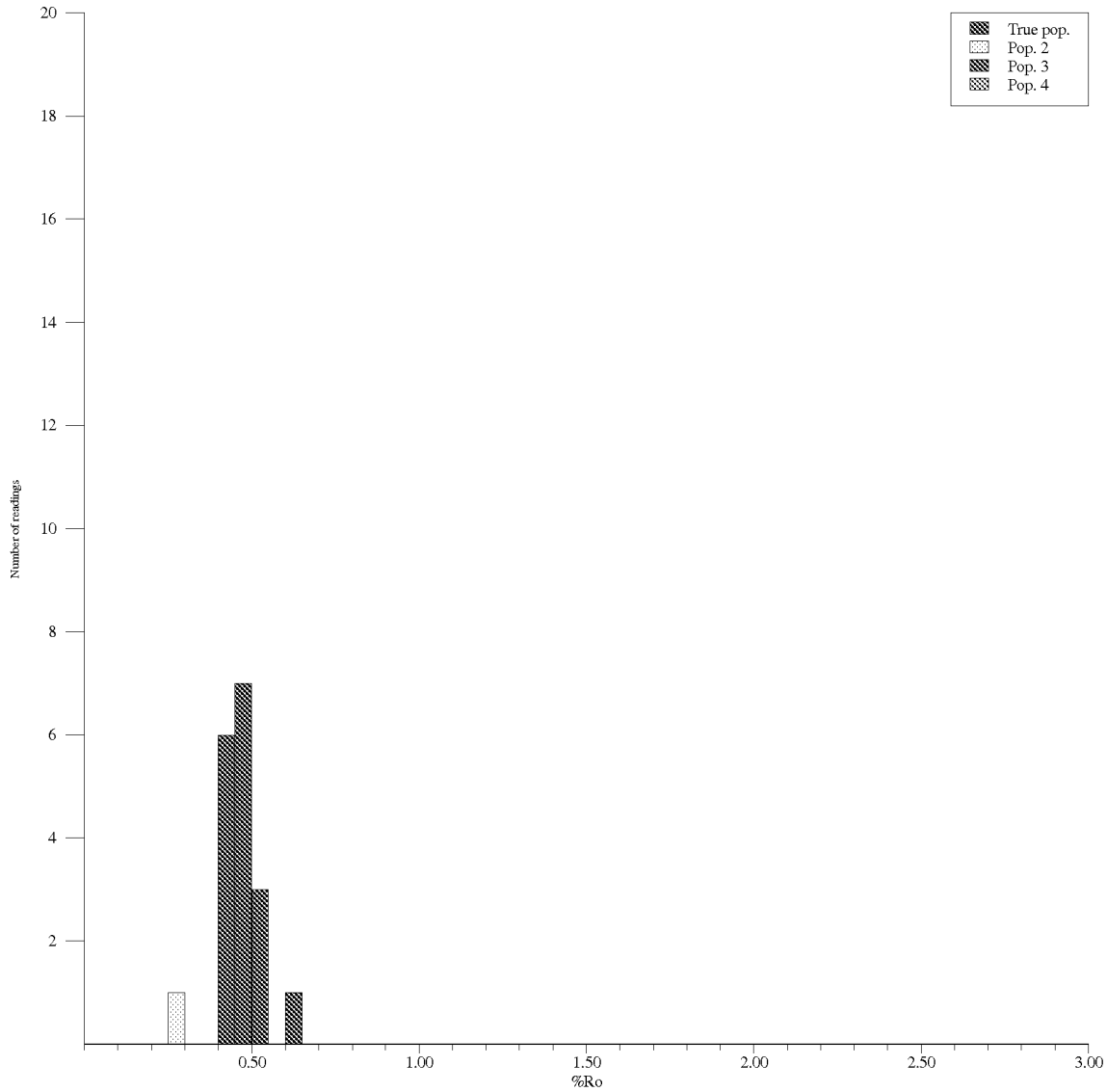
Comments:
Calcareous shale is dominated by immature vitrinite and low-leveled reworked vitrinite particles and inertinite. Moderate to strong bitumen matrix staining. Dark red matrix; yellow high intensity mineral; YO and LO spores; dk red matrix fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1740
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39469

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	+

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.	0.47±0.05	0.28±0.00		
Individual	0.411	0.277		
measurements	0.416			
3	0.418			
4	0.423			
5	0.431			
6	0.441			
7	0.451			
8	0.453			
9	0.463			
10	0.466			
11	0.473			
12	0.476			
13	0.476			
14	0.519			
15	0.519			
16	0.524			
17	0.607			
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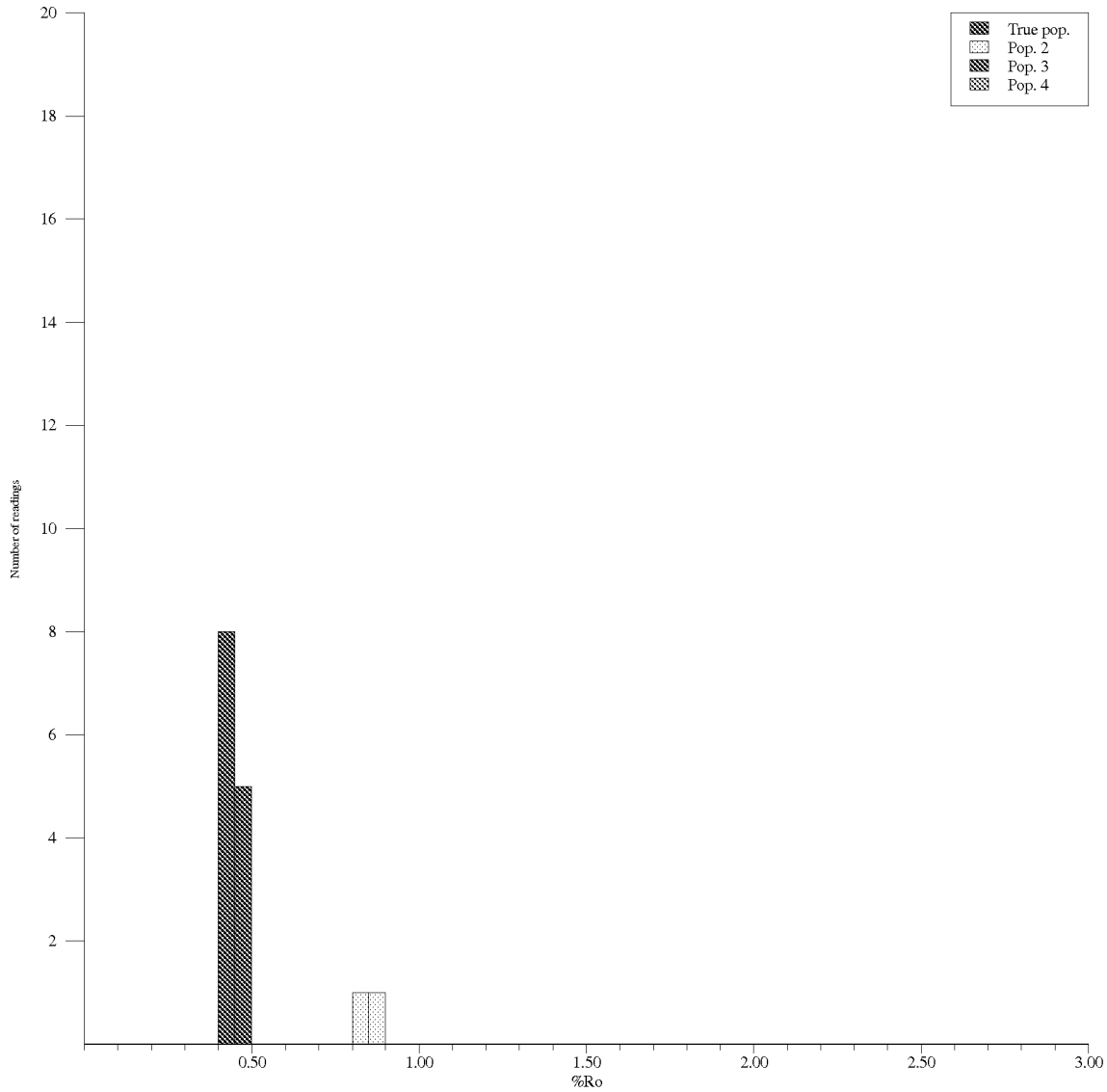
Comments:
Laminated shale has a low organic matter content that is dominated by inertinite, rewkd vitrinite with significant indigenous vitrinite. Matrix bitumen staining is strong. Very pyritic. Yellow algal; yellow-orange to light orange spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1800
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39470

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	-
Type of vitrinite	o
Particle size	-
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.	0.44±0.03	0.86±0.04		
Individual	0.402	0.830		
measurements	0.409	0.889		
3	0.417			
4	0.417			
5	0.433			
6	0.438			
7	0.447			
8	0.450			
9	0.452			
10	0.457			
11	0.459			
12	0.481			
13	0.497			
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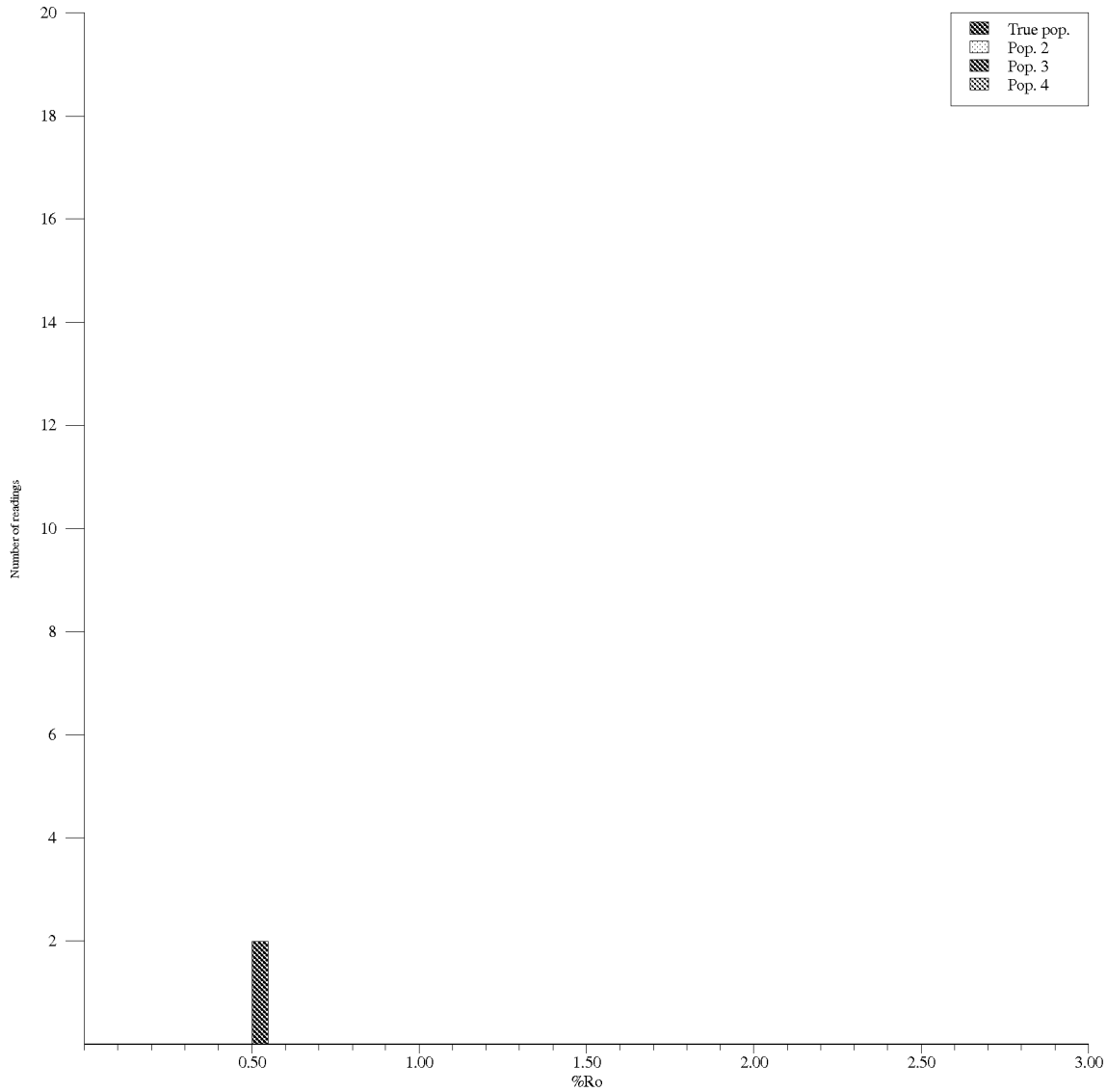
Comments:
Shale has a low organic matter content dominated by tiny particles of inertinite, rwkd vitrinite; minor indigenous vitrinite. Extremely pyritic. Extremely pyritic. Yellow algal; yellow to light orange spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	1900
Sample type	DC
Lithology	clyst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39471

Quality rating:	
Average sample quality	P
Abundance of vitrinite	+
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.	0.53±0.01			
Individual measurements	0.521 0.533			
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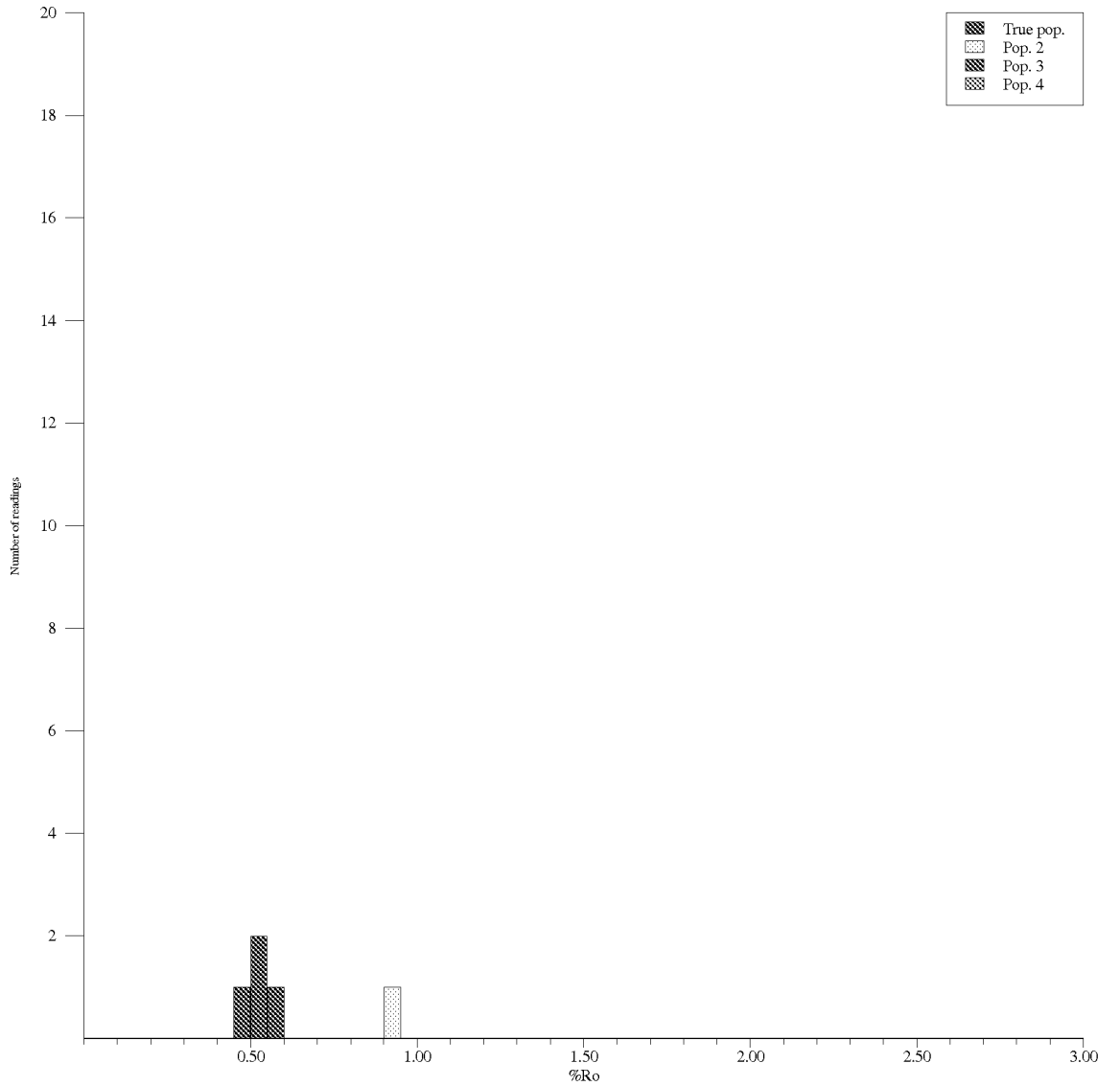
Comments:
Claystone has a trace to low organic matter content dominated by inertinite, reworked vitrinite with significant indigenous vitrinite. Matrix bitumen staining is light. Barren of fluorescing liptinite.



Sample info:	
Well	6507/11-7
Lower depth	2000
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39472

Quality rating:	
Average sample quality	M
Abundance of vitrinite	-
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.	0.53±0.03	0.92±0.00		
Individual	0.492	0.919		
measurements	0.542			
3	0.542			
4	0.554			
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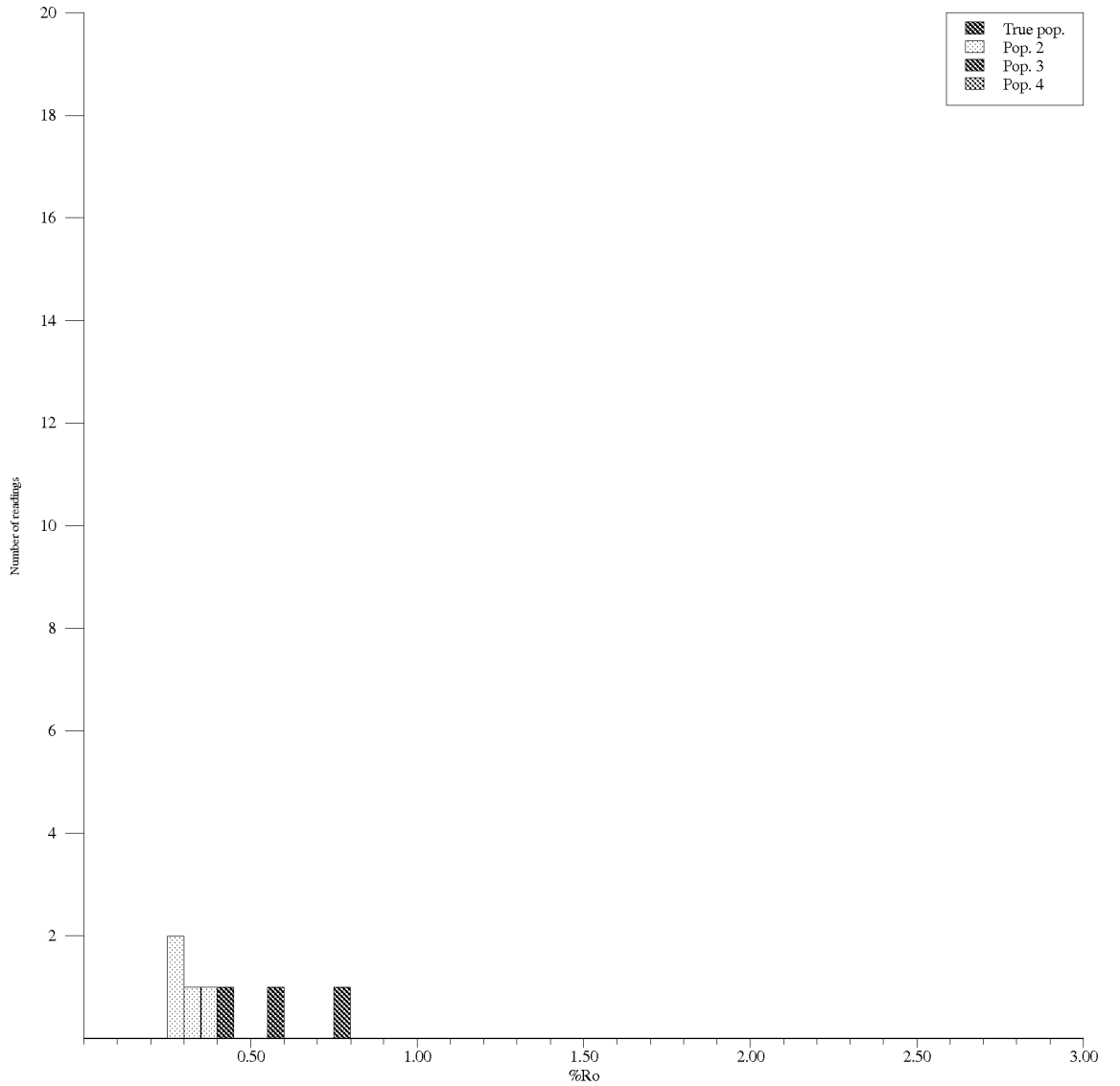
Comments:
Siltstone has a low organic matter content that is dominated by inertinite, reworked vitrinite with minor indigenous vitrinite and liptinite streaks. Matrix bitumen staining is strong. Yellow algal; light orange spore and dull red matrix fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2040
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39473

Quality rating:	
Average sample quality	P
Abundance of vitrinite	-
Identification of vitrinite	-
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.	0.51±0.12	0.32±0.05	0.75±0.00	
Individual	0.423	0.274	0.753	
measurements	0.592	0.279		
3		0.347		
4		0.367		
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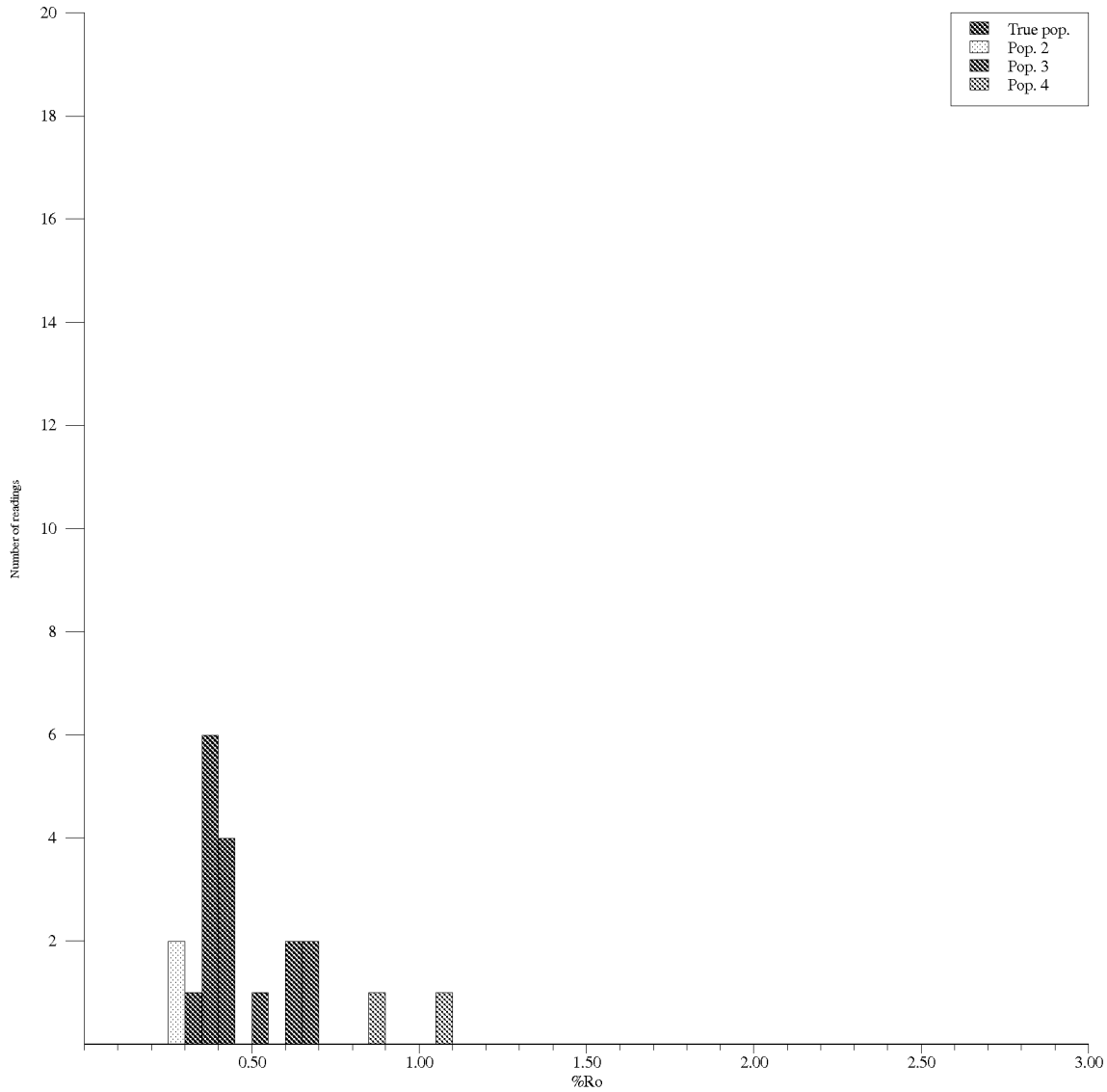
Comments:
Siltstone has a low organic matter content that is dominated by small particles of inertinite, reworked vitrinite with traces of indigenous vitrinite. Matrix bitumen staining is strong. Highly pyritic. No convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2060
Sample type	DC
Lithology	Sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39474

Quality rating:	
Average sample quality	P
Abundance of vitrinite	o
Identification of vitrinite	-
Type of vitrinite	-
Particle size	-
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.	0.39±0.03	0.29±0.01	0.62±0.07	0.96±0.14
Individual	0.342	0.282	0.503	0.859
measurements	0.369	0.299	0.641	1.061
3	0.369		0.648	
4	0.381		0.656	
5	0.389		0.673	
6	0.396			
7	0.398			
8	0.406			
9	0.420			
10	0.432			
11	0.437			
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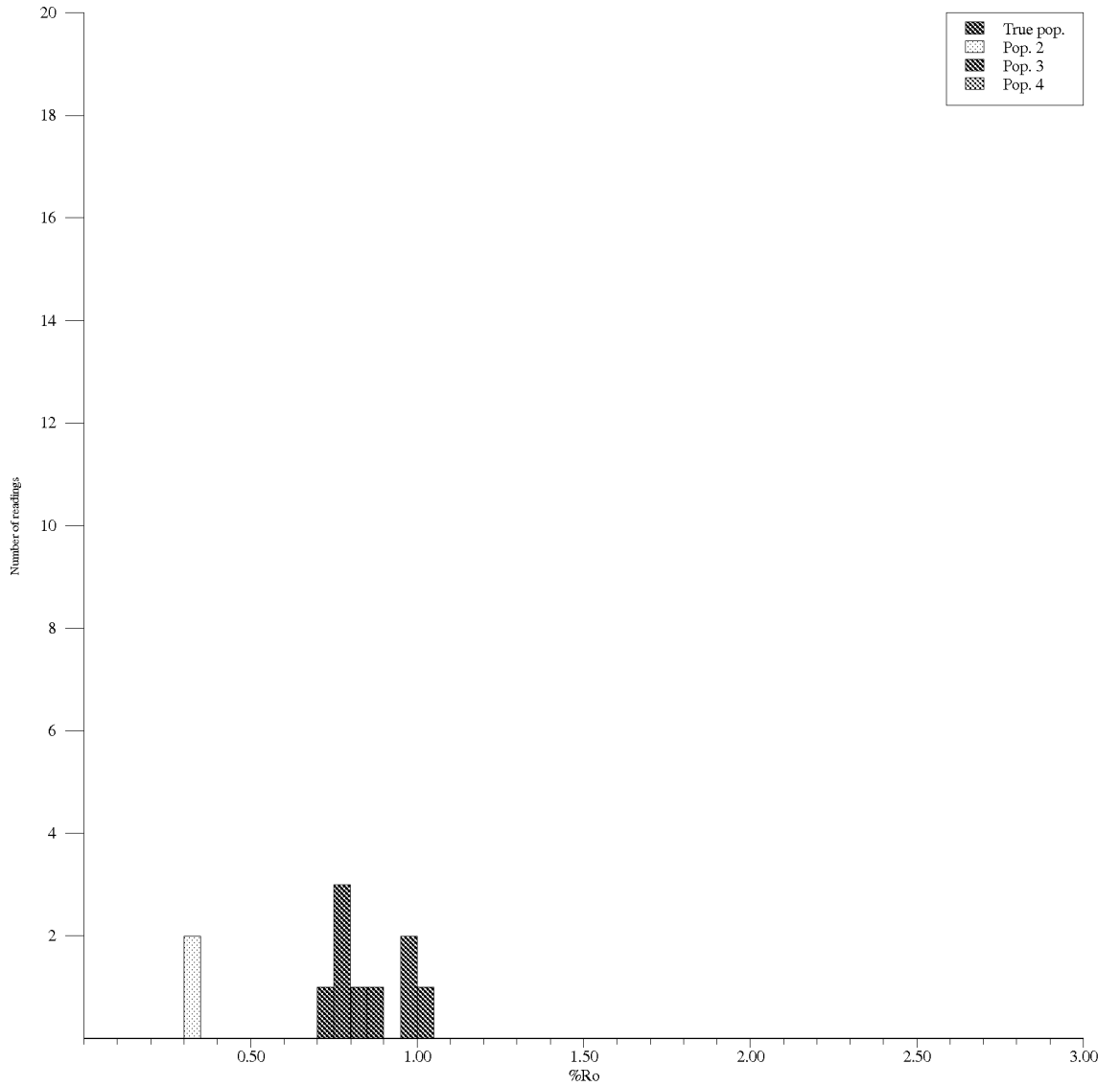
Comments:
Shale has a low organic matter content that is dominated by small particles of inertinite, reworked vitrinite with minor vitrinite. Differentiation is difficult. Small yellow orange to light orange spore fragment fluorescence. Lignite contamination.



Sample info:	
Well	6507/11-7
Lower depth	2100
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39475

Quality rating:	
Average sample quality	M
Abundance of vitrinite	+
Identification of vitrinite	+
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.	0.78±0.05	0.31±0.01	0.99±0.02	
Individual	0.724	0.302	0.966	
measurements	0.754	0.312	0.999	
3	0.759		1.002	
4	0.767			
5	0.840			
6	0.855			
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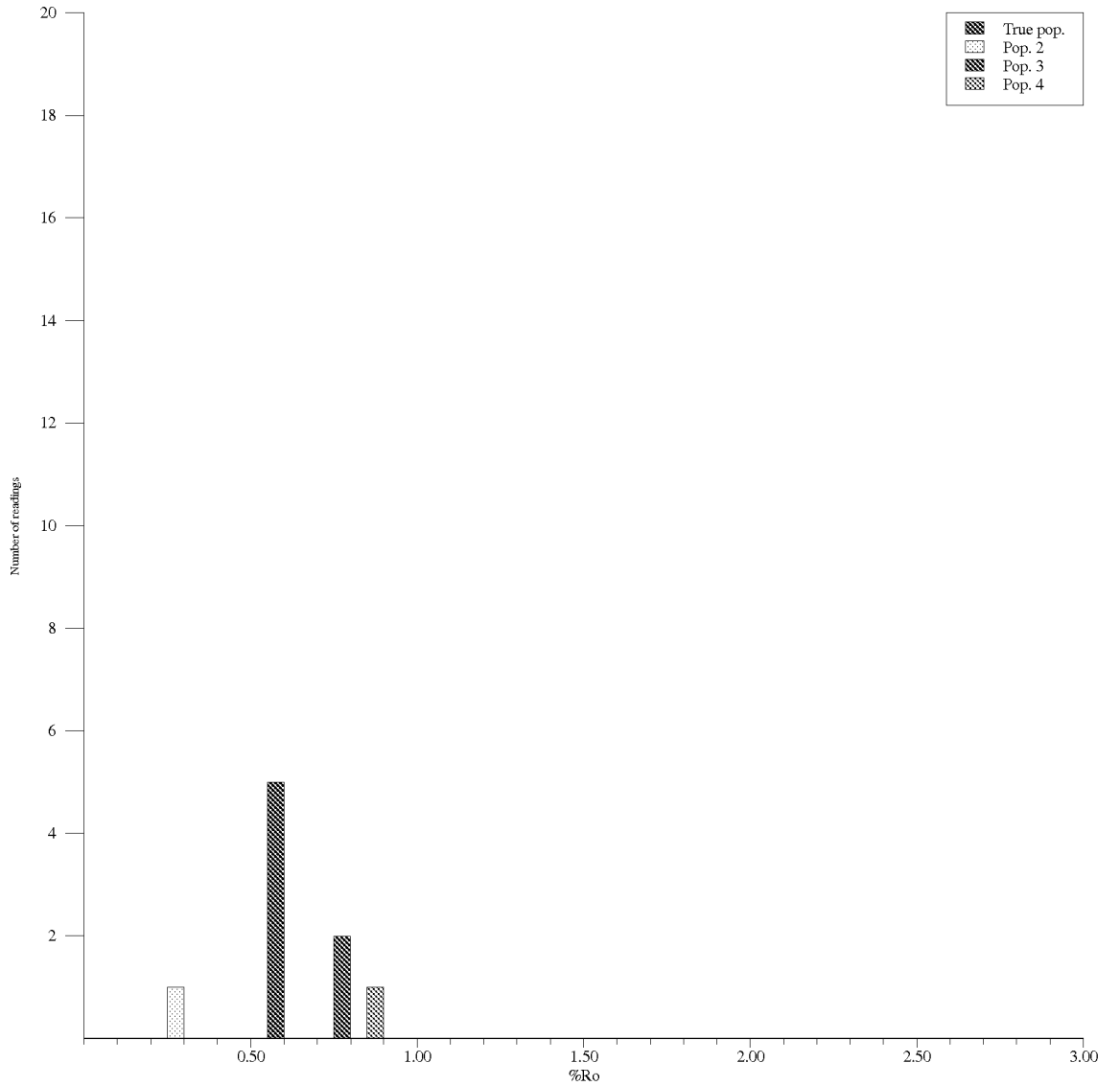
Comments:
Marl has a trace to low organic matter content dominated by inertinite (occasional graphite), rwkd vitrinite with significant indigenous vitrinite. Matrix bitumen staining is strong and black grey. Pyritic. Tentative dull dark red spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2200
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39476

Quality rating:	
Average sample quality	M
Abundance of vitrinite	+
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.	0.58±0.01	0.27±0.00	0.76±0.01	0.88±0.00
Individual	0.563	0.272	0.757	0.876
measurements	0.580		0.770	
3	0.590			
4	0.593			
5	0.597			
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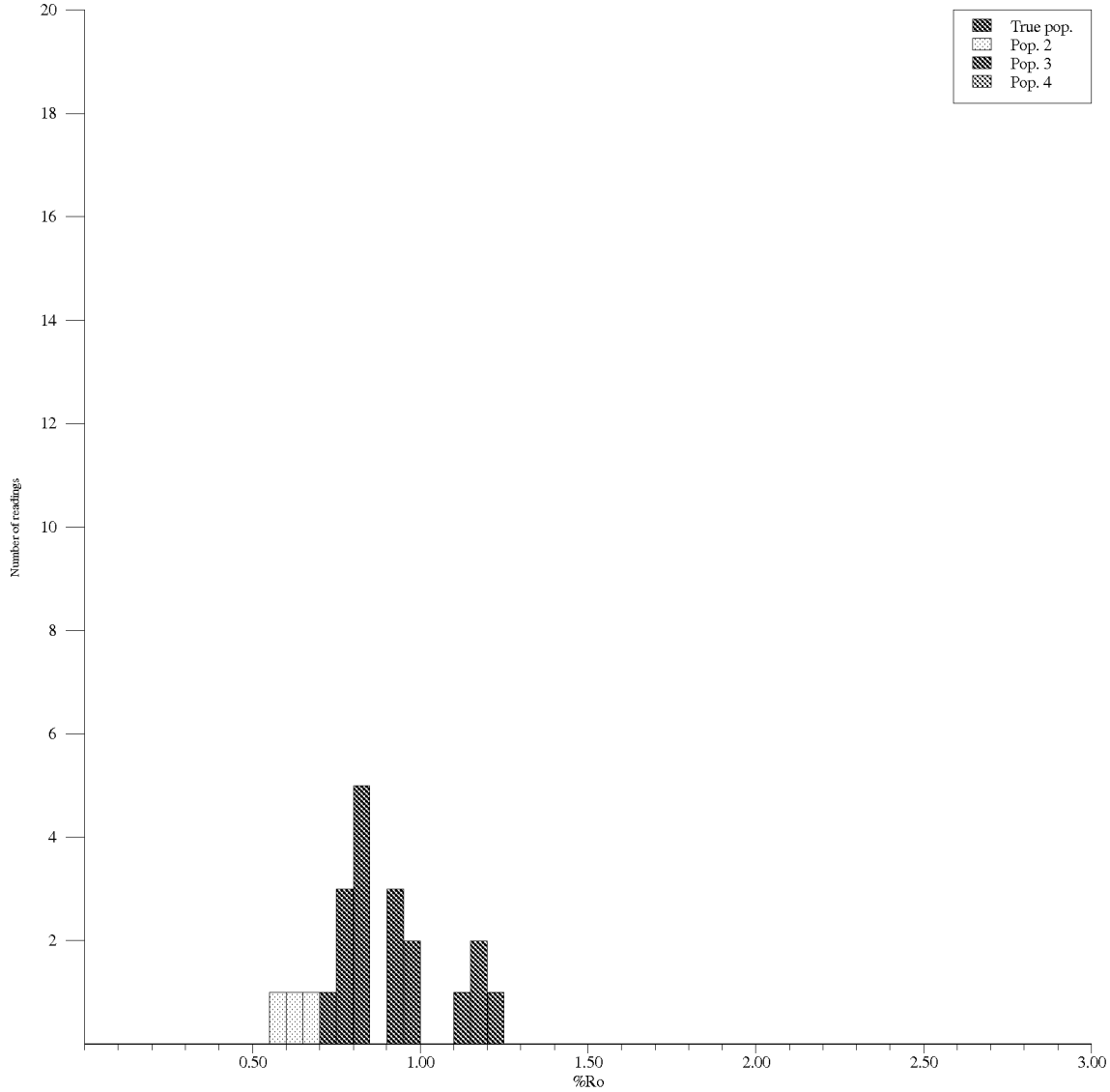
Comments:
Silty shale has a trace to low organic matter content that is dominated by inertinite, reworked vitrinite (blocky) with trace indigenous vitrinite. Matrix bitumen staining is patchy and moderate. No convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2230
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39477

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	+
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.	0.85±0.08	0.62±0.04	1.17±0.02	
Individual	0.738	0.578	1.144	
measurements	0.754	0.616	1.171	
3	0.759	0.660	1.181	
4	0.762		1.200	
5	0.808			
6	0.817			
7	0.832			
8	0.834			
9	0.837			
10	0.926			
11	0.941			
12	0.948			
13	0.958			
14	0.960			
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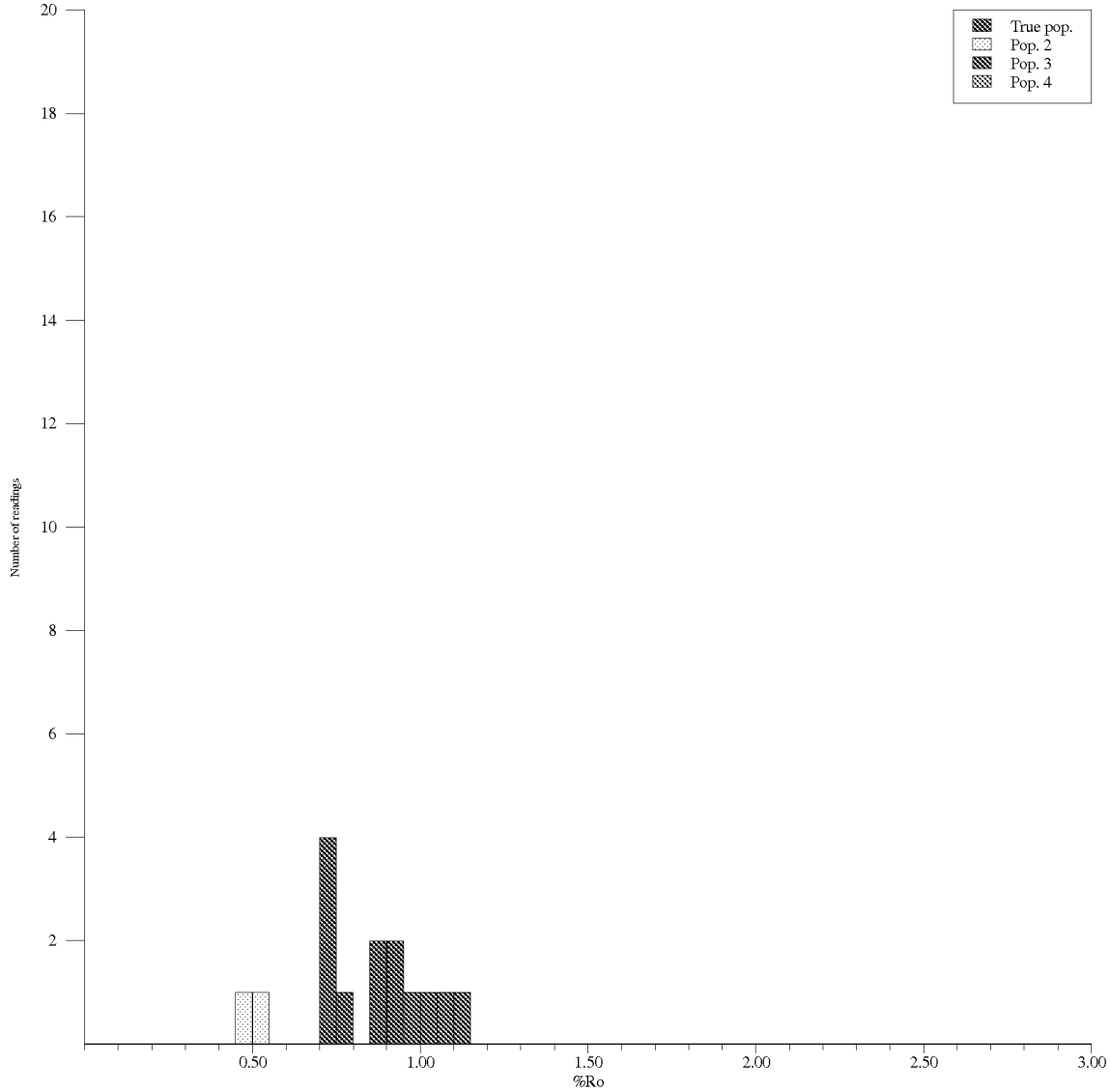
Comments:
Silty shale (rutile rich) is very similar to sample 2,200 m with significant black grey matrix staining. Small particles but also some larger coaly clasts (reworked). No convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2250
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39478

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	+
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.	0.81±0.08	0.50±0.01	1.05±0.05	
Individual	0.735	0.493	0.998	
measurements	0.739	0.512	1.003	
3	0.739		1.088	
4	0.749		1.100	
5	0.756			
6	0.894			
7	0.899			
8	0.902			
9	0.921			
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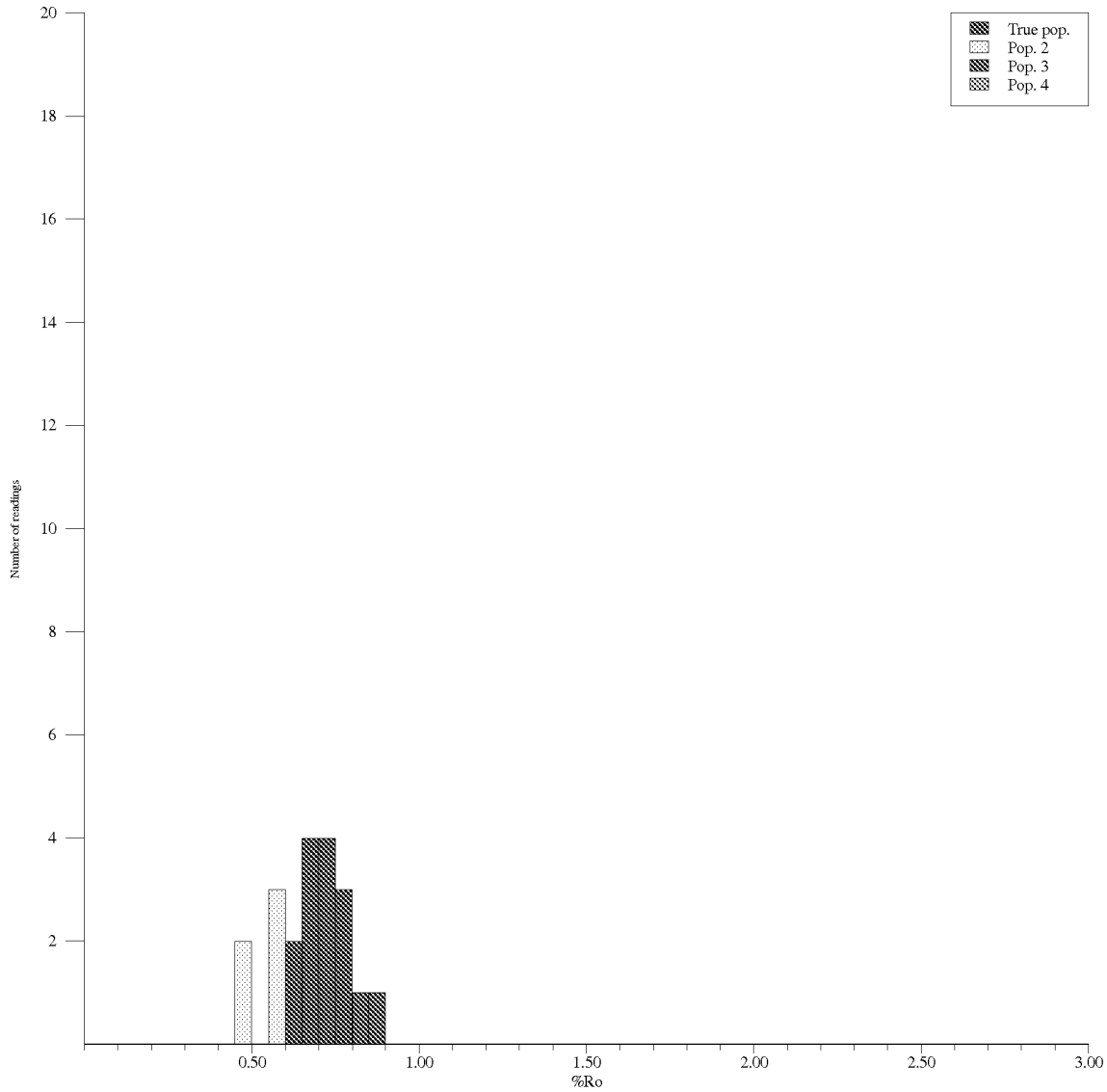
Comments:
Silty shale is rich in rutile and has a trace to low organic matter content, dominated by small particles of inertinite, rwkd vitrinite and trace indigenous vitrinite. Differentiation is difficult. No convincing fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2300
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39479

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	+
Type of vitrinite	o
Particle size	-
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.	0.70±0.05	0.54±0.04	0.86±0.02	
Individual measurements	0.632	0.484	0.845	
	0.642	0.499	0.877	
3	0.652	0.567		
4	0.669	0.572		
5	0.676	0.579		
6	0.693			
7	0.700			
8	0.702			
9	0.722			
10	0.739			
11	0.758			
12	0.775			
13	0.790			
14				
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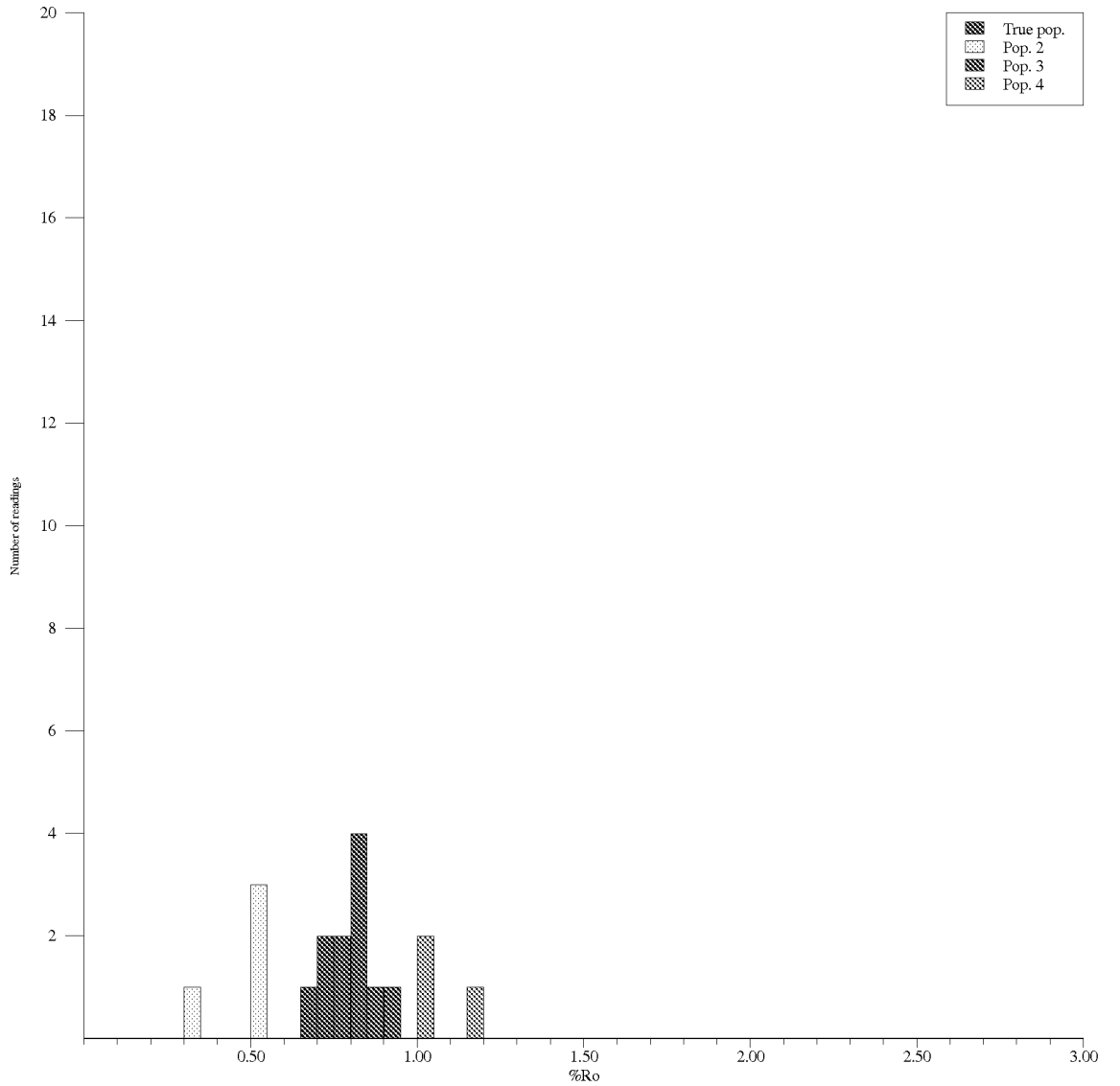
Comments:
Silty shale has a low organic matter content that is dominated by small particles of inertinite, reworked vitrinite with minor indigenous vitrinite. Pyritic. Yellow algal tentative and very small specks.



Sample info:	
Well	6507/11-7
Lower depth	2400
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39480

Quality rating:	
Average sample quality	G
Abundance of vitrinite	o
Identification of vitrinite	+
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.	0.78±0.06	0.47±0.08	0.89±0.02	1.06±0.10
Individual	0.687	0.345	0.879	1.005
measurements	0.711	0.503	0.908	1.007
3	0.738	0.515		1.172
4	0.787	0.520		
5	0.794			
6	0.804			
7	0.823			
8	0.830			
9	0.845			
10				
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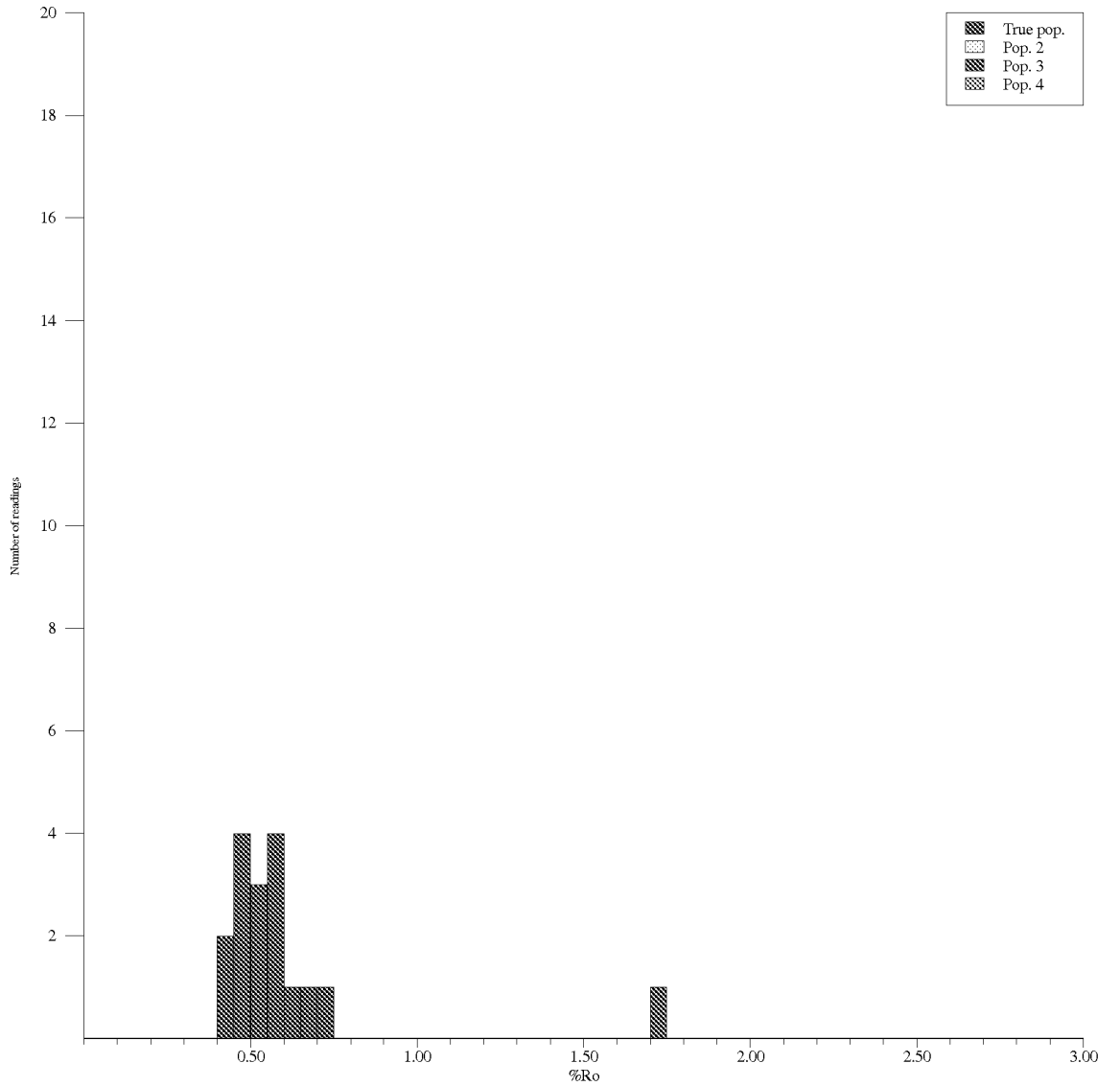
Comments:
Shale has a low organic matter content that is dominated by inertinite, reworked vitrinite (blocky) with trace indigenous vitrinite. Pyritic. I small spore fragment fluoresces weak mid orange (tentative)..



Sample info:	
Well	6507/11-7
Lower depth	2500
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39481

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.	0.54±0.08		1.70±0.00	
Individual measurements	0.421		1.705	
3	0.448			
4	0.484			
5	0.494			
6	0.496			
7	0.499			
8	0.501			
9	0.518			
10	0.530			
11	0.559			
12	0.566			
13	0.574			
14	0.578			
15	0.603			
16	0.687			
17	0.704			
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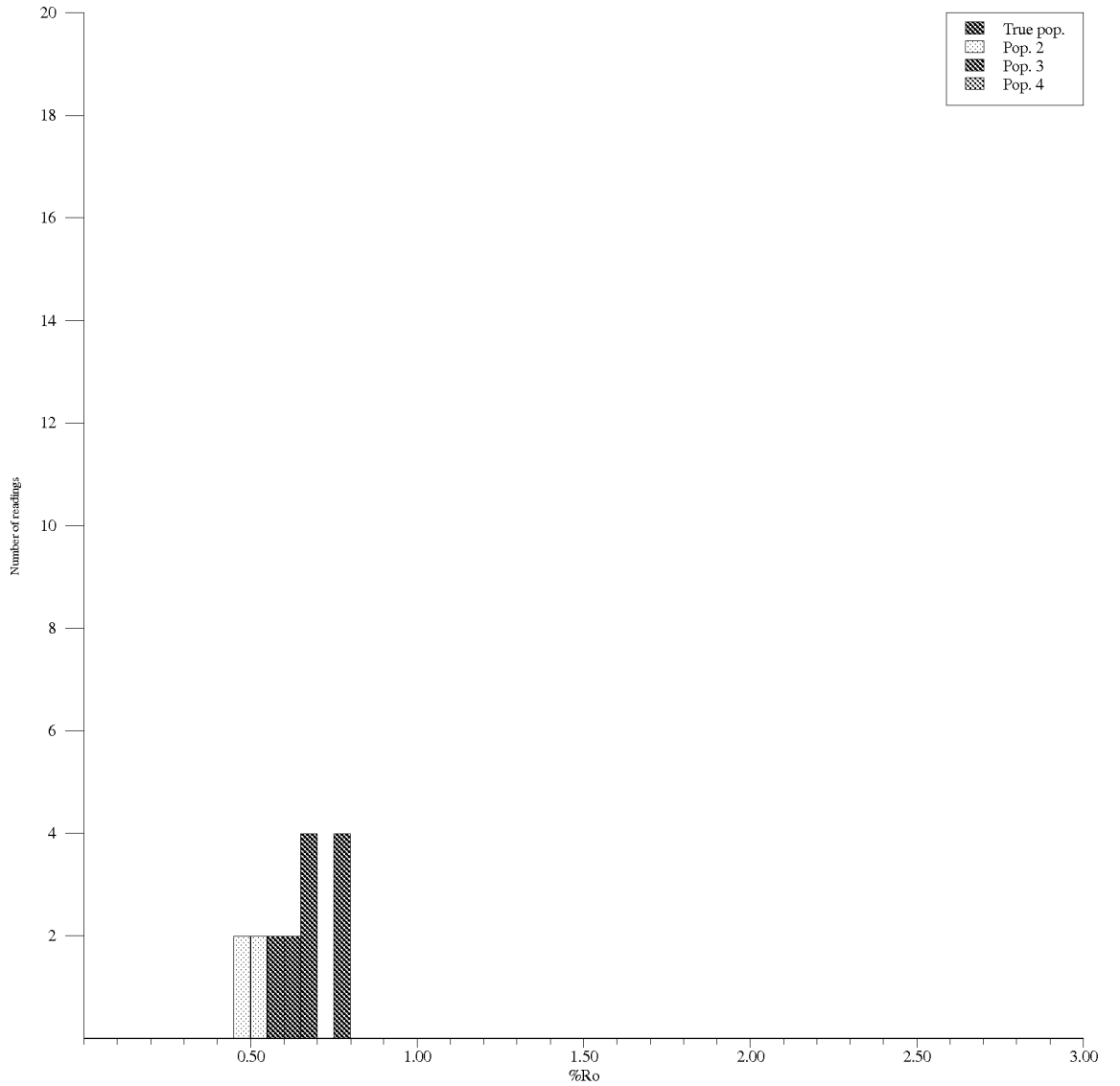
Comments:
Marl has a low organic matter content that is dominated by inertinite, reworked vitrinite with minor indigenous vitrinite. Occasional bitumen streaks Tentative mid orange spore fragment; Yellow mineral and weak red matrix fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2510
Sample type	DC
Lithology	lst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39482

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.	0.69±0.07	0.50±0.03		
Individual	0.589	0.465		
measurements	0.599	0.484		
3	0.635	0.509		
4	0.645	0.538		
5	0.662			
6	0.662			
7	0.667			
8	0.674			
9	0.757			
10	0.764			
11	0.784			
12	0.789			
13				
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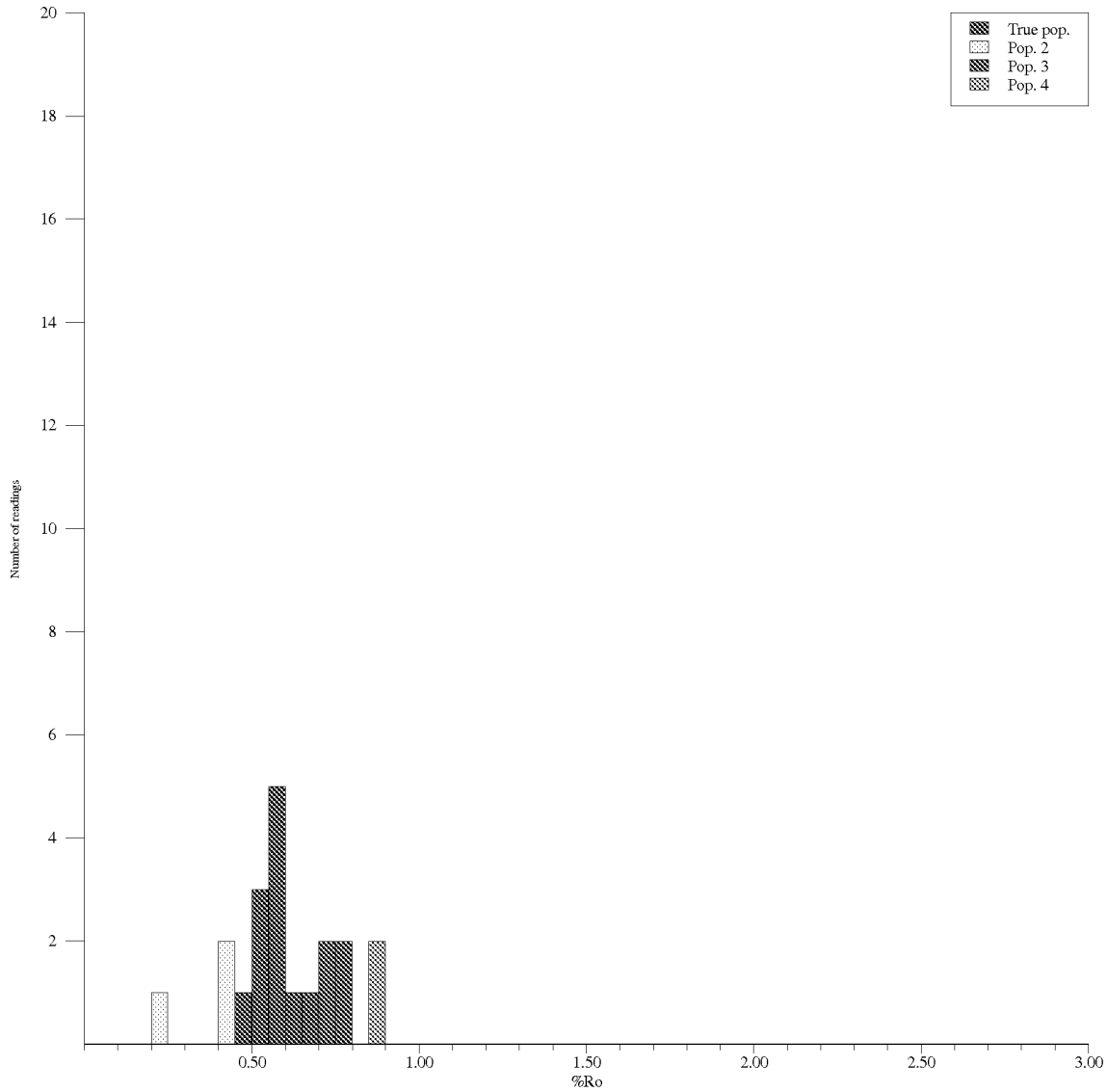
Comments:
Very similar to sample 2,500 but no convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2520
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39483

Quality rating:	
Average sample quality	G
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	-
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.	0.57±0.05	0.36±0.12	0.76±0.04	0.86±0.01
Individual	0.460	0.222	0.725	0.853
measurements	0.535	0.423	0.732	0.868
3	0.545	0.448	0.788	
4	0.550		0.795	
5	0.579			
6	0.581			
7	0.591			
8	0.593			
9	0.596			
10	0.608			
11	0.676			
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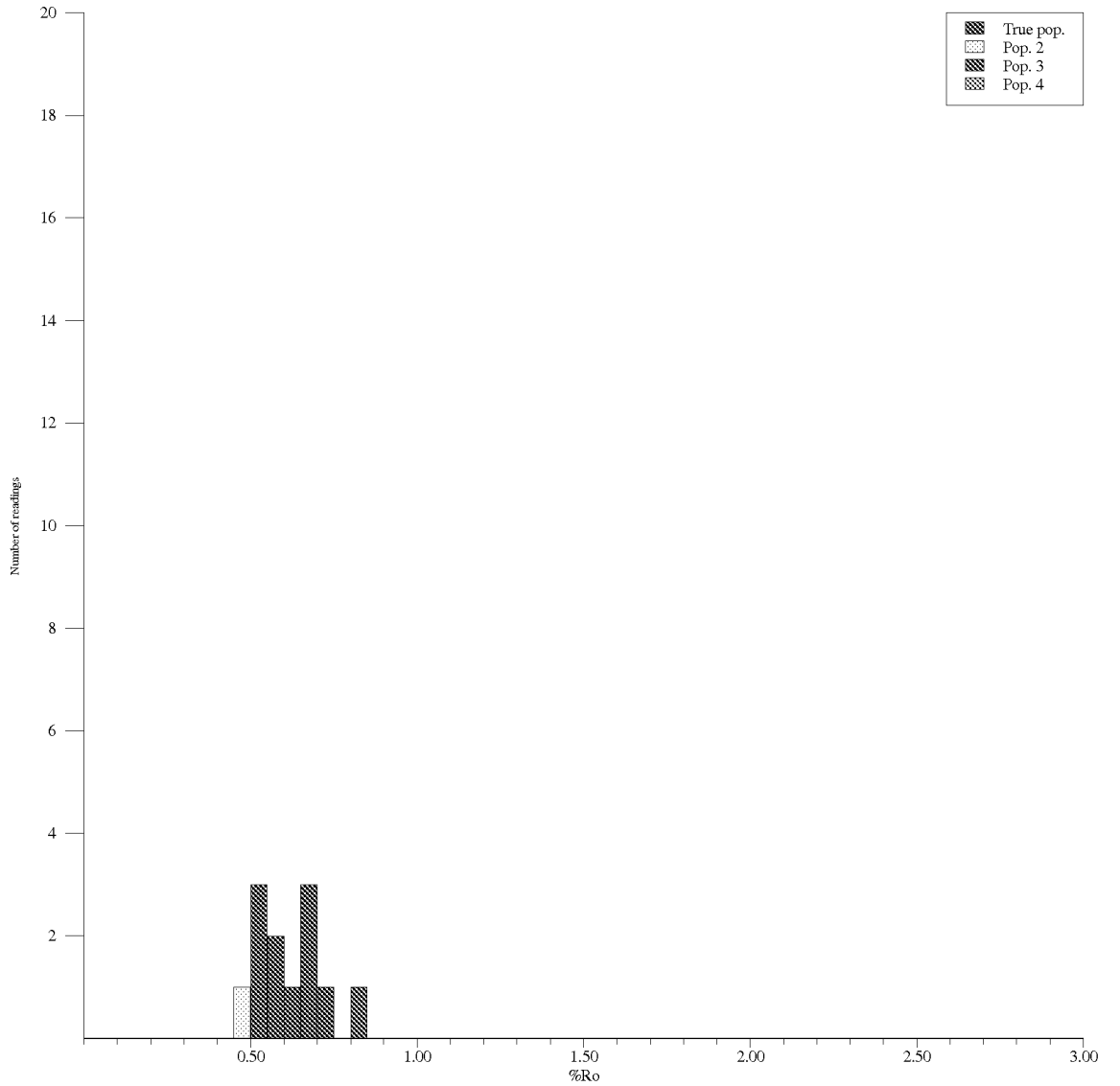
Comments:
Silty shale has a moderately rich organic matter content dominated by inertinite, rwkd vitrinite with significant indigenous vitrinite. Pyritic (euhedral). Yellow-orange algae; dark orange spore and dark orange spores (tentative). Lignite contamination?.



Sample info:	
Well	6507/11-7
Lower depth	2600
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39484

Quality rating:	
Average sample quality	G
Abundance of vitrinite	o
Identification of vitrinite	o
Type of vitrinite	o
Particle size	-
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.	0.61±0.08	0.47±0.00	0.82±0.00	
Individual	0.501	0.472	0.820	
measurements	0.525			
3	0.528			
4	0.574			
5	0.591			
6	0.603			
7	0.667			
8	0.691			
9	0.691			
10	0.710			
11				
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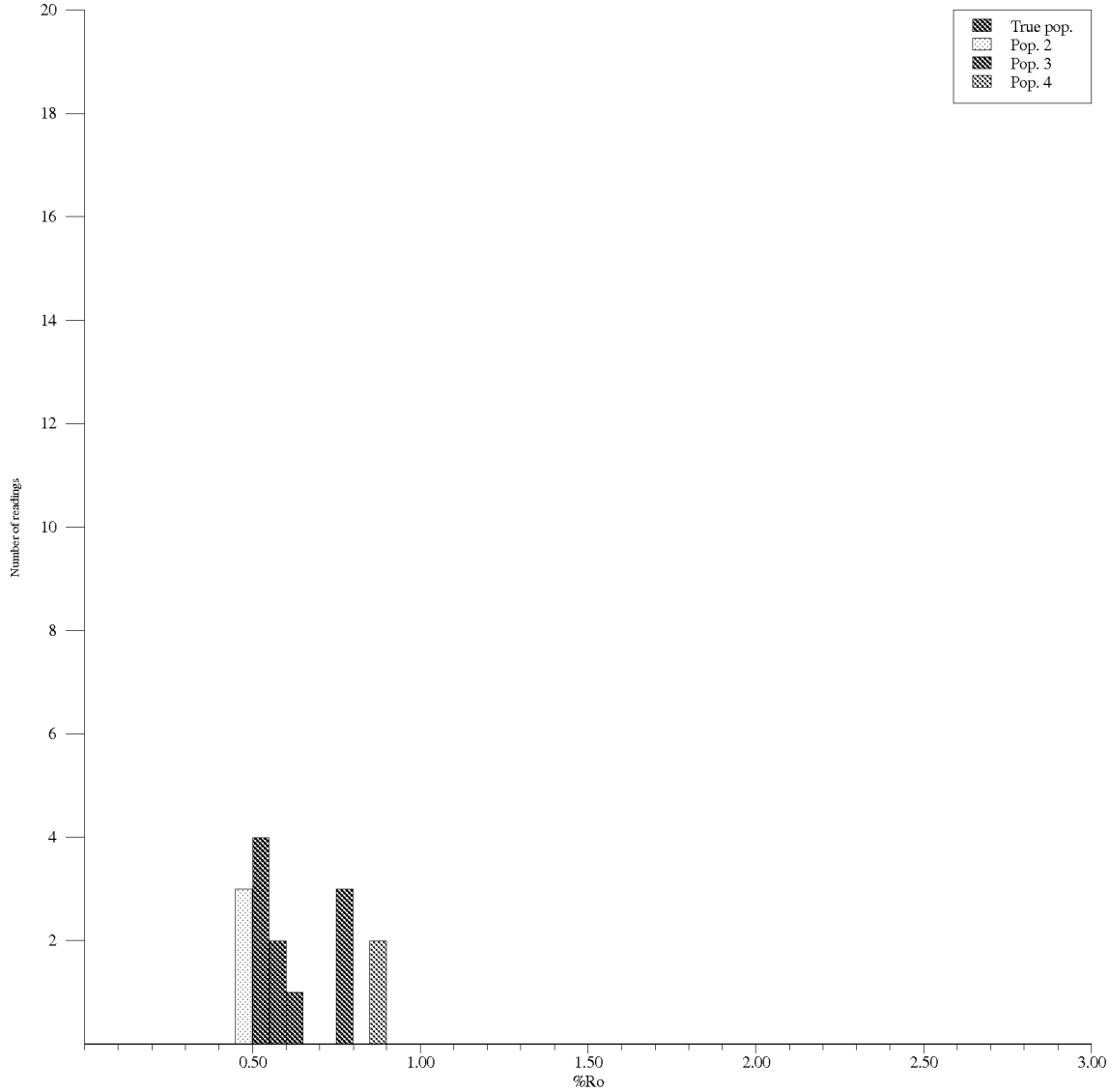
Comments:
Very similar to sample 2,520 m.



Sample info:	
Well	6507/11-7
Lower depth	2698
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39485

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	+

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.	0.56±0.05	0.48±0.02	0.78±0.00	0.85±0.00
Individual	0.500	0.455	0.779	0.853
measurements	0.520	0.473	0.781	0.856
3	0.527	0.498	0.781	
4	0.532			
5	0.577			
6	0.600			
7	0.644			
8				
9				
10				
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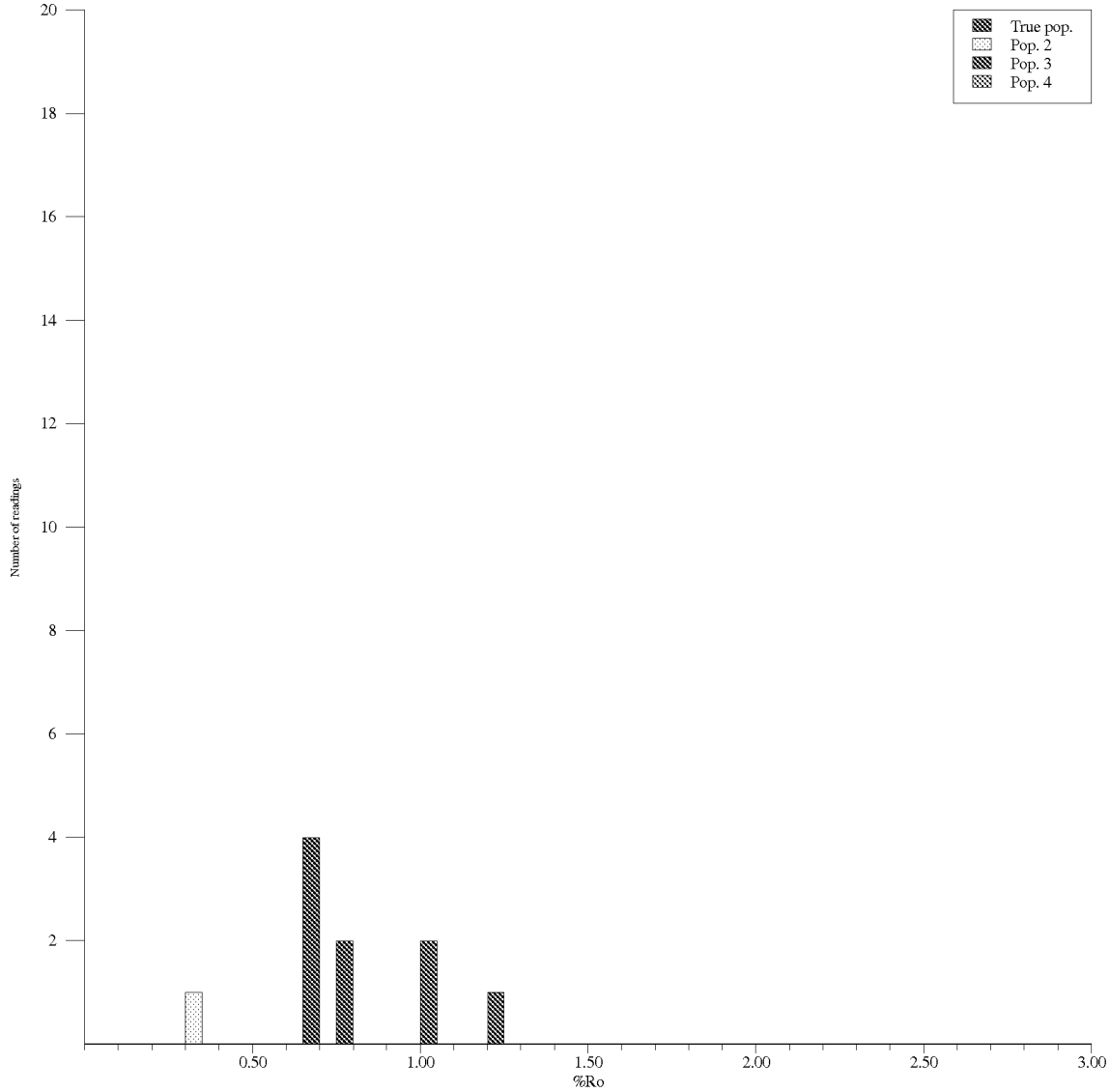
Comments:
Silty shale has a low organic matter content that is dominated by inertinite, reworked vitrinite with minor indigenous vitrinite. Pyritic. No convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2770
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39486

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	+

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.	0.70±0.05	0.32±0.00	1.10±0.10	
Individual	0.664	0.320	1.038	
measurements	0.669		1.045	
3	0.671		1.219	
4	0.674			
5	0.757			
6	0.777			
7				
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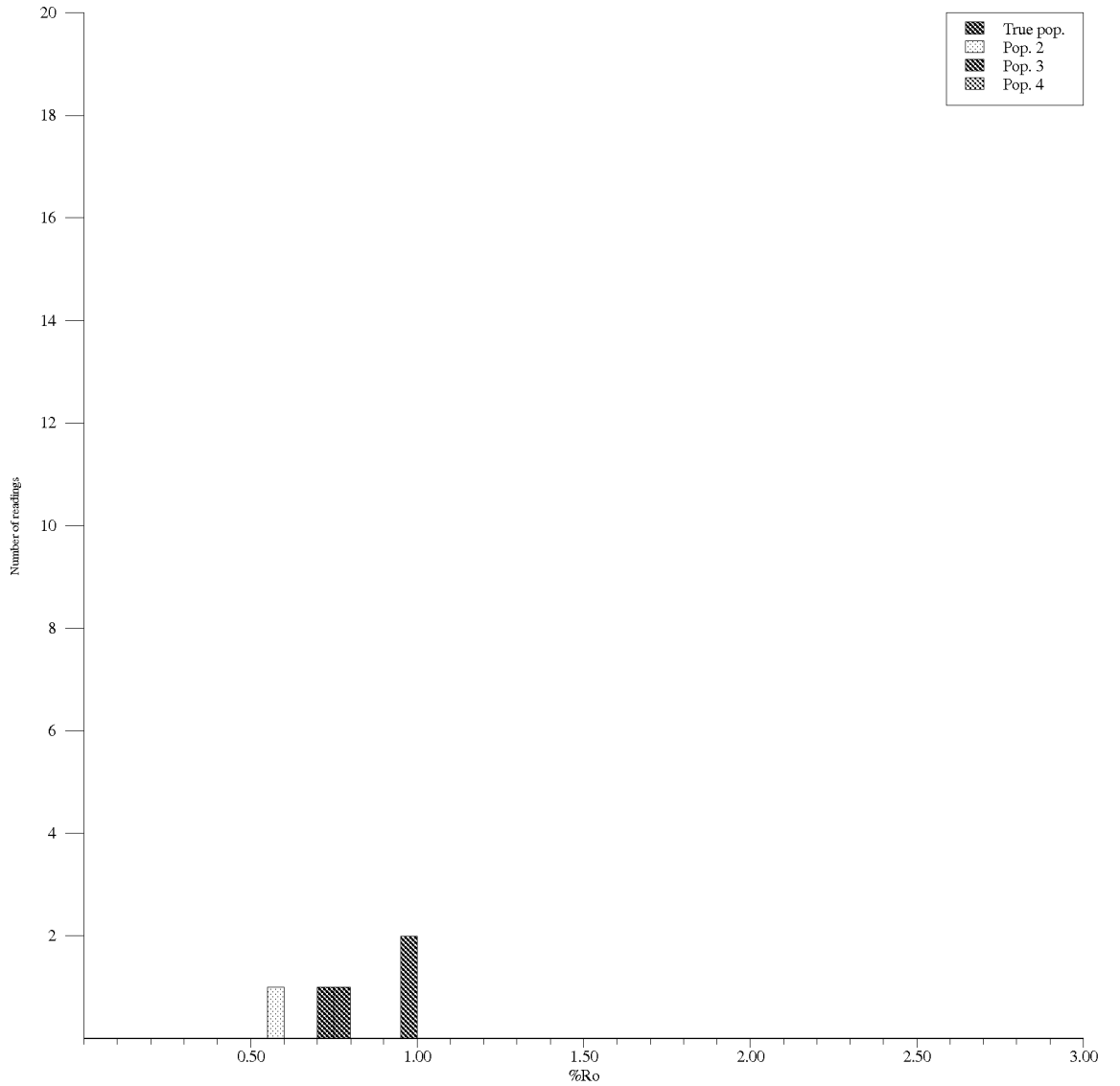
Comments:
Shale residue has a low organic matter content that is dominated by small particles of inertinite, reworked vitrinite with minor indigenous vitrinite. Pyritic. Traces of very weak light to mid orange spores and dull red matrix fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2791
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39487

Quality rating:	
Average sample quality	M
Abundance of vitrinite	+
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.	0.76±0.01	0.59±0.00	0.97±0.01	
Individual measurements	0.749	0.591	0.960	
	0.762		0.970	
3				
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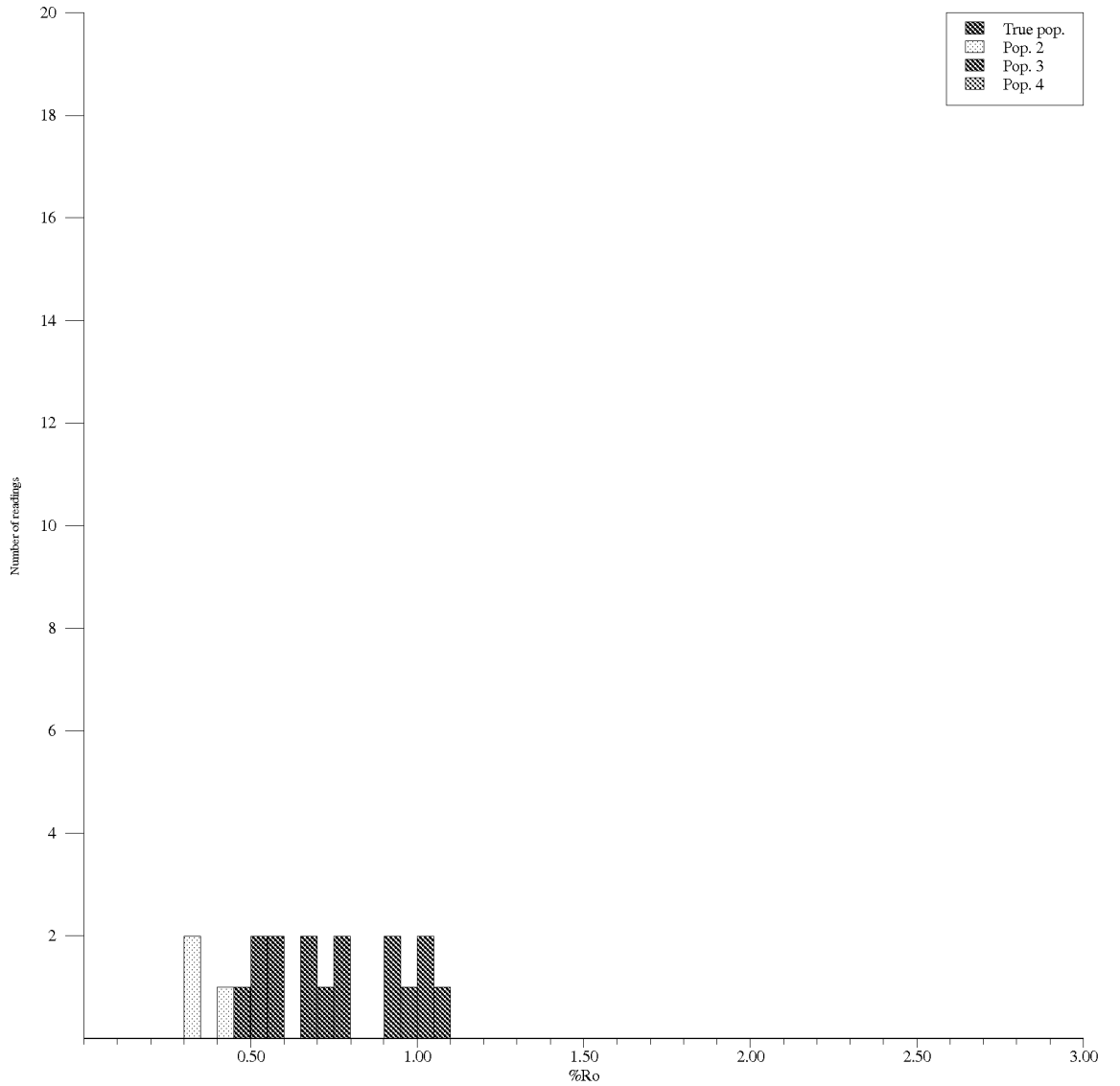
Comments:
Small sample. Shale has a trace to low organic matter content that is dominated by inertinite, reworked vitrinite with trace indigenous vitrinite. Pyritic. Yellow to light orange spore fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2851
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39488

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	+

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.	0.63±0.11	0.34±0.05	0.98±0.05	
Individual	0.473	0.305	0.929	
measurements	0.503	0.310	0.939	
3	0.528	0.400	0.954	
4	0.581		1.007	
5	0.586		1.015	
6	0.681		1.060	
7	0.696			
8	0.711			
9	0.754			
10	0.756			
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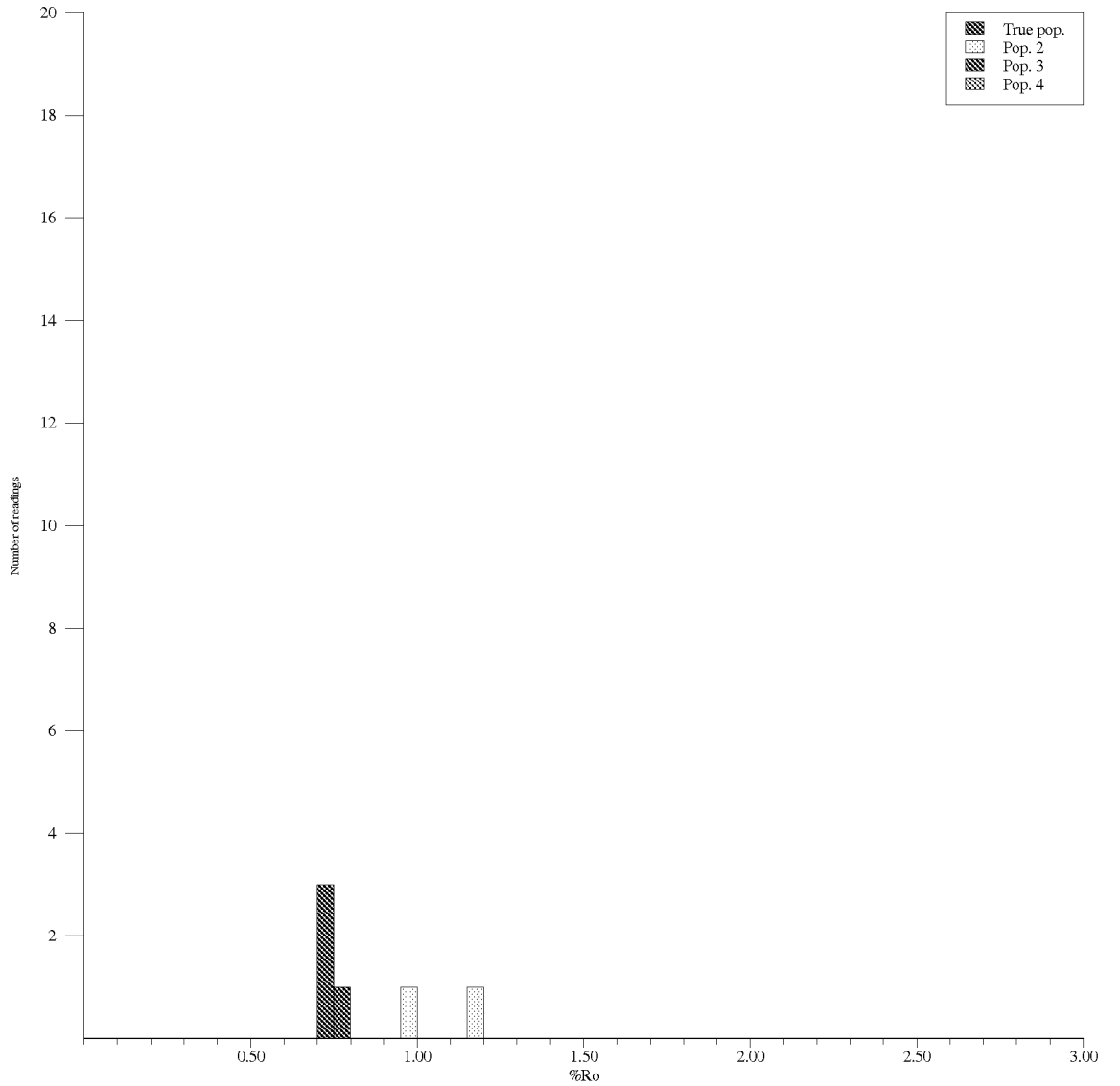
Comments:
Shale has a low organic matter content that is dominated by inertinite, reworked vitrinite with minor indigenous vitrinite. Tiny fragments of light orange to mid orange fluorescing spores.



Sample info:	
Well	6507/11-7
Lower depth	2905
Sample type	DC
Lithology	sh
Preparation	HF
Date of analysis	20.05.2007
APT ID	39489

Quality rating:	
Average sample quality	M
Abundance of vitrinite	-
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.	0.74±0.01	1.07±0.14		
Individual	0.731	0.971		
measurements	0.739	1.171		
3	0.744			
4	0.756			
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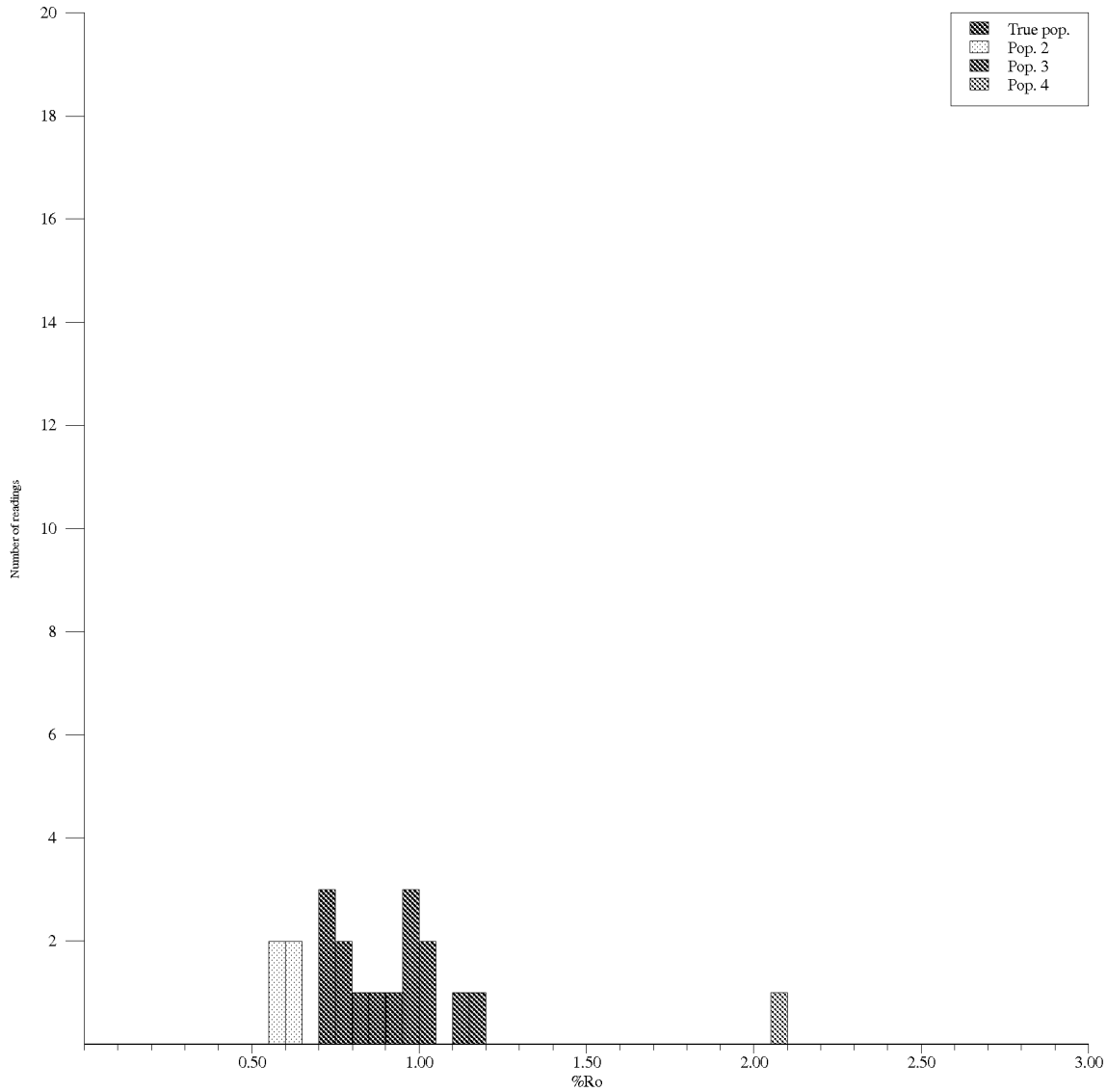
Comments:
Shale has a low organic matter content that is dominated by inertinite, reworked vitrinite with trace indigenous vitrinite. No convincing organic fluorescence.



Sample info:	
Well	6507/11-7
Lower depth	2944
Sample type	DC
Lithology	slst
Preparation	HF
Date of analysis	20.05.2007
APT ID	39490

Quality rating:	
Average sample quality	M
Abundance of vitrinite	o
Identification of vitrinite	-
Type of vitrinite	o
Particle size	-
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.	0.79±0.08	0.60±0.03	1.04±0.07	2.10±0.00
Individual	0.718	0.568	0.982	2.096
measurements	0.720	0.593	0.994	
3	0.723	0.618	0.994	
4	0.765	0.623	1.002	
5	0.775		1.019	
6	0.835		1.139	
7	0.855		1.159	
8	0.942			
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Comments:
Siltstone has a moderate organic matter content that is dominated by small particles of inertinite, reworked vitrinite with traces of indigenous vitrinite. Matrix bitumen staining is black grey. No convincing organic fluorescence.

Experimental Procedures

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

Sample preparation

Cuttings samples are washed in water to remove mud. When oil based mud is used, soap (Zalo) is added to the sample and the sample is washed thoroughly in warm water to remove mud and soap.

Vitrinite reflectance analysis

The samples are prepared either as "whole rock" or are treated with hydrochloric and hydrofluoric acid prior to further preparation. The aim of the acid treatment is to avoid soft and expanding mineral phases in order to ensure good polishing quality. The whole rock or the kerogen resulting from the acid treatment is embedded in an epoxy resin to make briquettes, ground flat and polished using 0.25 micron diamond paste and magnesium oxide as the two final steps.

The analytical equipment used is a Zeiss MPM 03 photometer microscope equipped with an Epiplan-Neofluar 40/0.90 oil objective. The sensitive measuring spot is kept constant for all measurements at about 2.5 micron in diameter. The measurements are made through a green band pass filter (546 nm) and in oil immersion (refractive index 1.515 at 18 °C). The readings are made without a polarizer and using a stationary stage. This procedure is called measurement of random reflectance (%Rm). The photometer is calibrated daily against a standard of known reflectance (%Rm = 0.588) and routinely (daily) checked against two other standards of significant different reflectances (%Rm = 0.879 and 1.696). A deviation from these values of less than ± 0.01 and ± 0.02 respectively is considered acceptable. The calibration is routinely checked during the course of measurements at least every hour, and a deviation of less than ± 0.005 is considered acceptable.

For each sample at least 20 points are measured if possible, and quality ratings are given to various important aspects, which may affect the measurements. These aspects are abundance of vitrinite, uncertainties in the identification of indigenous vitrinite, type of vitrinite, particle size, particle surface quality and abundance of pyrite.

APPENDIX III

Molecular composition of head space gas

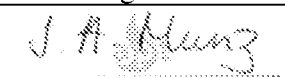
Molecular composition - Headspace gas from well 6507/11-7

Applied Petroleum Technology AS
P. O. Box 123
2027 Kjeller
Norway

Address: Applied Petroleum Technology AS
P.O.Box 123
2027 Kjeller
Telephone: +47 63 80 60 00
Telefax: +47 63 80 11 38

Report number APT07-1280	Classification Confidential
Report Title Molecular composition - Headspace gas from well 6507/11-7	Submitted 2007-05-22
Client Norsk Hydro ASA	Service Order 5399258
Client Reference Vibeke Hatlø	Number of pages 4
Distribution Norsk Hydro ASA (digital) IFE (2) APT (digital)	

Authors
Ingar Johansen

	Name	Date	Signature
Reviewed by	Ingrid Anne Munz	2007-05-21	
Approved by	Tore Haaland	2007-05-21	

CONTENTS

Introduction

Composition and isotopes of the headspace gas were ordered, but the amount of gas were too low in all the samples to measure isotopes.

Table 1. Number of analyses performed

Analysis	Cuttings	Total
Headspace	7	7

Table 2. Gas Composition (volume-%)

Well	Sample type	Sample info	Upper Depth (m)	Lower Depth (m)	APT ID	C1%	C2%	C3%	iC4%	nC4%	iC5%	nC5%	CO2%	Sum C1-C5	Wetness	iC4/nC4	ppm
6507/11-7	DCG		2776	2782	39454	6.1	1.1	1.3	1.4	0.97	0.00	0.00	89.1	10.9	43.8	1.5	270
6507/11-7	DCG		2782	2788	39455	11.6	1.7	2.0	3.2	1.9	2.6	1.7	75.4	24.6	43.0	1.7	322
6507/11-7	DCG		2788	2794	39456	10.8	1.8	2.9	3.3	1.7	1.9	1.2	76.4	23.6	47.3	1.9	896
6507/11-7	DCG		2794	2800	39457	10.5	1.6	1.5	1.9	1.3	1.6	0.99	80.6	19.4	37.6	1.4	408
6507/11-7	DCG		2800	2806	39458	11.7	1.3	0.91	0.88	0.63	0.62	0.47	83.6	16.4	24.1	1.4	398
6507/11-7	DCG		2806	2812	39459	9.7	1.3	0.82	1.1	0.78	1.0	0.59	84.7	15.3	29.2	1.4	502
6507/11-7	DCG		2812	2818	39460	17.4	2.7	3.2	3.8	2.2	2.3	1.6	66.8	33.2	40.6	1.8	494

Experimental Procedures

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

GC analysis of gas components

Aliquots of the samples were transferred to exetainers. 0.1-1ml were sampled using a Gerstel MPS2 autosampler and injected into a Hewlett Packard 5890 Series II GC equipped with Porabond Q column, a flame ionisation detector (FID), a thermal conductivity detector (TCD) and a methylization unit. Hydrocarbons were measured by FID, CO_2 by metylization (to CH_4) and then FID and N_2 and O_2 by TCD.