

**Geochemistry Report –
Wells 1/3-11 and 1/3-11 T2
(Ipswich)**



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1 INTRODUCTION

This report represents a review of petroleum geochemical data for wells 1/3-11 and 1/3-11 T2 (Ipswich). The analysed samples are 18 ditch cutting samples, 5 core plugs, 5 oils and 6 drilling mud samples. The oil and mud samples were subjected to a full geochemical examination following a standard program for detailed oil analyses as shown by *Table 1.1*, whereas the sediment samples were only subjected to screening analyses as these were found to be severely contaminated by the drilling mud, which masked any migrated hydrocarbons that may have been present.

The mud was an OBM (Oil Based Mud) the detailed composition of which was unknown, but the following organic components have been mentioned by the client: Clairsol NS, Carbomul HT, FL-1790, Carbo-Gel, Magma-Trol and Magma-Gel. The mud had also been used previously so, it cannot be excluded that it may contain crudes from other locations.

The data are summarised in this part of the report together with interpretations and conclusions, whereas data tables, chromatograms etc can be found in the Appendix. The numeric data are also provided separately in a digital format.

Table 1.1: Number of analyses performed

Analysis	Cuttings	Core	Fluid	Mud	Total
Lithology	18	5			23
Thermal extr. GC	2	5			7
Iatroscan	18	5	5	6	34
Extraction	18	5			23
Asphaltenes	18	5	5	6	34
MPLC	8	3	5	6	22
Density/Topping			5		5
GC of Whole Oil			5		5
GC of Saturated hydrocarbons			5	6	11
GC-MS of Saturated hydrocarbons	7	3	5	6	21
GC-MS of Aromatic hydrocarbons	7	3	5	6	21
Carbon Isotopes on EOM and fractions			3*5	3*6	33



APPENDIX – Tables and Chromatograms

Table 1. Number of analyses performed

Analysis	Cuttings	Core	Fluid	Mud	Total
Lithology	18	5			23
Thermal extr. GC	2	5			7
Iatroscan	18	5	5	6	34
Extraction	18	5			23
Asphaltenes	18	5	5	6	34
MPLC	8	3	5	6	22
Density/Topping			5	6	11
GC of Whole Oil			5		5
Stable isotope of fractions			5	6	11
GC of Saturated hydrocarbons			5	6	11
GC-MS of Saturated hydrocarbons	7	3	5	6	21
GC-MS of Aromatic hydrocarbons	7	3	5	6	21

Table 2. Lithology Description

Well	Sample type	Lower Depth (m)	APT ID	%	Lithology	Attributes
1/3-11	DC	2500	53991A	100%	CLYST	md drk gy
1/3-11	DC	2500	53991B	trace	LST	or gy, marly
1/3-11	DC	2520	53992A	100%	CLYST	md drk gy
1/3-11	DC	2520	53992B	trace	LST	or gy, marly
1/3-11	DC	3186	53993A	100%	SST	op-smky gy-brn gy, f, l
1/3-11	DC	3186	53993B	trace	CLYST	md drk gy
1/3-11	DC	3186	53993C	trace	KAO	w
1/3-11	DC	3192	53994A	50%	SST	op- lt gy, vf, l
1/3-11	DC	3192	53994B	50%	CLYST	gy w-lt gy, slty
1/3-11	DC	3192	53994C	trace	CLYST	md drk gy
1/3-11	DC	3204	53995A	90%	SST	op- lt gy w, f-vf, l
1/3-11	DC	3204	53995B	10%	LST	w
1/3-11	DC	3204	53995C	trace	CLYST	md drk gy
1/3-11	DC	3210	53996A	75%	SST	op-smky gy- gy, f-vf, l
1/3-11	DC	3210	53996B	15%	LST	w- lt gy w
1/3-11	DC	3210	53996C	10%	CLYST	lt gy-gy
1/3-11	DC	3216	53997A	85%	SST	smky gy, f, l
1/3-11	DC	3216	53997B	10%	LST	w-lt gy w
1/3-11	DC	3216	53997C	5%	CLYST	gy-md drk gy
1/3-11	DC	3234	53998A	75%	SST	op-lt gy-smky gy, f, l
1/3-11	DC	3234	53998B	15%	LST	w-lt gy w
1/3-11	DC	3234	53998C	10%	CLYST	gy-md drk gy
1/3-11	DC	3240	53999A	80%	SST	op-lt gy-smky gy, f, l
1/3-11	DC	3240	53999B	20%	CLYST	gy- md drk gy
1/3-11	DC	3240	53999C	trace	KAO	w
1/3-11	DC	3270	54000A	100%	SST	op- lt gy-lt smky gy, f, l
1/3-11	DC	3270	54000B	trace	CLYST	gy
1/3-11	DC	3270	54000C	trace	CONTAM	dried drill mud

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Well	Sample type	Lower Depth (m)	APT ID	%	Lithology	Attributes
1/3-11	DC	3276	54001A	80%	SST	op- lt gy- lt smky gy, f, l
1/3-11	DC	3276	54001B	15%	LST	w-lt gy w
1/3-11	DC	3276	54001C	5%	CLYST	gy- md drk gy
1/3-11 T2	DC	2600	54002A	100%	CLYST	gy- md drk gy
1/3-11 T2	DC	2600	54002B	trace	LST	or gy, marly
1/3-11 T2	DC	2600	54002C	trace	SLST	lt gy-pl or gy
1/3-11 T2	DC	3215	54003A	50%	SLST	lt gy
1/3-11 T2	DC	3215	54003B	50%	CLYST	gy-md drk gy
1/3-11 T2	DC	3374	54004A	40%	SST	op- lt smky gy- brn gy, f, l
1/3-11 T2	DC	3374	54004B	30%	LST	w-lt gy w
1/3-11 T2	DC	3374	54004C	20%	CLYST	gy
1/3-11 T2	DC	3374	54004D	10%	KAO	w, slty
1/3-11 T2	DC	3398	54005A	40%	SST	op- lt gy- smky gy, f-vf, l
1/3-11 T2	DC	3398	54005B	50%	LST	w- lt gy w
1/3-11 T2	DC	3398	54005C	10%	CLYST	gy- md drk gy
1/3-11 T2	DC	3467	54006A	40%	SST	op- lt gy- smky gy, f-vf, l
1/3-11 T2	DC	3467	54006B	40%	LST	w- lt gy w
1/3-11 T2	DC	3467	54006C	20%	CLYST	md drk gy
1/3-11 T2	DC	3491	54007A	60%	SST	gy- smky gy, f, l
1/3-11 T2	DC	3491	54007B	35%	LST	w-lt gy
1/3-11 T2	DC	3491	54007C	5%	CLYST	gy
1/3-11 T2	DC	3512	54008	100 %	LST	lt gy w- pl ol gy
1/3-11 T2	COPL	3294.55	54306	100 %	SST	gy, hrd, sr
1/3-11 T2	COPL	3295.61	54307	100 %	SST	gy, hrd, st
1/3-11 T2	COPL	3296.23	54308	100 %	SST	gy, hrd, st
1/3-11 T2	COPL	3414.02	54309	100 %	CLYST	md drk gy, waxy
1/3-11 T2	COPL	3414.56	54310	100 %	SST	lt gy- lt brn gy, Qz, hrd

Table 3. GC of Whole Oil (parameters)

Well	Sample type	Lower Depth (m)	APT ID	A	B	X	W	C	I	F	H	U	R	S
1/3-11 T2	Oil	3294.50	54423	0.54	0.85	0.48	5.45	0.78	1.29	0.66	21.97	1.30	2.87	48.96
1/3-11 T2	Oil	3294.50	54424	0.54	0.85	0.48	5.40	0.77	1.26	0.66	21.96	1.30	2.95	46.72
1/3-11 T2	Oil	3294.50	54425	0.53	0.85	0.48	5.43	0.77	1.29	0.66	21.95	1.30	2.88	48.64
1/3-11 T2	Oil	3294.50	54426	0.54	0.85	0.48	5.51	0.78	1.29	0.67	22.07	1.29	2.88	50.14
1/3-11 T2	Oil	3294.50	54427	0.54	0.85	0.47	5.49	0.78	1.27	0.67	22.01	1.29	2.88	47.57

- A: Benz/n-C₆
- B: Tol/n-C₇
- X: m+p-Xyl/n-C₈
- W: Benz*10/CyC₆
- C: (n-C₆+n-C₇)/(CyC₆+MCyC₆)
- I: (2-MC₆+3-MC₆)/(c1,3-DMCyC₅+t1,3-DMCyC₅+t1,2-DMCyC₅)
- F: n-C₇/MCyC₆
- H: n-C₇*100/(CyC₆+2-MC₆+3-MC₆+c1,3-DMCyC₅+t1,3-DMCyC₅+t1,2-DMCyC₅+n-C₇+MCyC₆)
- U: CyC₆/MCyC₅
- R: n-C₇/2-MC₆
- S: n-C₆/2,2-DMC₄

Table 4. GC of saturated compounds (parameters)

Well	Sample type	Lower Depth (m)	APT ID	CPI I	Pr/n-C17	Ph/n-C18	(Pr/n-C17)/(Ph/n-C18)	Pr/Ph	n-C17/(n-C17+C27)
1/3-11	Mud	1309	54009	0.97	0.54	0.52	1.04	2.84	1.00
1/3-11	Mud	3100	54010	0.94	0.51	0.52	0.99	2.96	1.00
1/3-11	Mud	3289	54011	0.87	0.51	0.54	0.94	2.80	1.00
1/3-11 T2	Mud	1268.50	54012	0.85	0.52	0.53	0.97	3.01	1.00
1/3-11 T2	Mud	3200	54013	0.83	0.51	0.52	0.97	2.90	1.00
1/3-11 T2	Mud	3595	54014	0.83	0.50	0.50	0.98	2.99	1.00
1/3-11 T2	Oil	3294.50	54423	1.01	0.50	0.48	1.05	2.46	0.94
1/3-11 T2	Oil	3294.50	54424	1.02	0.50	0.48	1.05	2.43	0.94
1/3-11 T2	Oil	3294.50	54425	1.01	0.50	0.48	1.05	2.38	0.94
1/3-11 T2	Oil	3294.50	54426	1.01	0.50	0.48	1.05	2.39	0.94
1/3-11 T2	Oil	3294.50	54427	1.02	0.50	0.47	1.07	2.40	0.93



Table 5. GCMS SIR of saturated compounds (parameters)

Well	Sample type	Lower Depth (m)	APT ID	%23:3	%28αβ	%30D	%27Ts	%22S	%29Ts	%20S	%ββ	%27dβS	%C27	%C29	28/29	24:4/23:3
1/3-11	DC	2500	53991	2.72	4.41	2.96	20.29	30.85	12.93	14.66	25.55	18.50	34.47	37.44	0.54	1.39
1/3-11	DC	3192	53994	9.77	6.61	6.85	52.40	58.19	16.74	36.89	45.69	22.32	33.60	37.22	0.68	0.60
1/3-11	DC	3240	53999	11.89	6.84	5.96	47.83	58.41	15.89	38.72	44.32	23.05	36.34	35.03	0.69	0.60
1/3-11 T2	DC	2600	54002	3.22	13.24	2.59	28.21	34.38	15.85	13.46	29.34	17.90	34.23	39.87	0.55	1.61
1/3-11 T2	DC	3215	54003	5.81	10.07	5.12	44.54	58.00	14.79	39.95	38.54	23.81	32.98	35.55	0.72	0.75
1/3-11 T2	DC	3398	54005	9.15	7.41	6.38	48.66	59.45	15.49	41.31	49.46	22.86	34.10	37.08	0.69	0.54
1/3-11 T2	DC	3491	54007	15.79	8.15	6.36	50.27	58.36	16.59	42.47	50.95	20.28	37.09	34.60	0.72	0.45
1/3-11	Mud	1309	54009	23.85	7.46	5.85	50.83	56.35	16.36	43.38	47.67	22.35	44.49	28.43	0.74	0.49
1/3-11	Mud	3100	54010	27.64	9.96	6.34	51.27	59.40	18.32	40.00	48.01	24.92	46.49	27.44	0.75	0.55
1/3-11	Mud	3289	54011	18.36	9.15	4.97	48.29	54.10	15.88	37.05	46.82	20.64	41.39	33.28	0.76	0.53
1/3-11 T2	Mud	1268.50	54012	22.15	9.85	5.50	49.78	57.51	15.64	39.59	49.30	21.64	41.45	28.66	0.77	0.61
1/3-11 T2	Mud	3200	54013	27.11	11.40	5.99	45.91	62.10	17.24	40.51	47.24	20.36	44.23	28.33	0.72	0.47
1/3-11 T2	Mud	3595	54014	35.70	10.87	6.38	51.14	57.16	18.15	38.24	52.43	20.40	44.95	26.44	0.81	0.41
1/3-11 T2	COPL	3295.61	54307	10.62	8.94	9.96	51.82	58.92	18.65	47.47	54.21	51.16	37.09	34.05	0.80	0.67
1/3-11 T2	COPL	3296.23	54308	10.86	8.62	10.32	51.26	58.81	18.66	46.85	53.90	52.10	36.96	33.84	0.79	0.64
1/3-11 T2	COPL	3414.02	54309	3.22	7.79	4.53	32.82	59.24	11.89	54.89	45.72	41.12	23.20	53.93	0.36	0.96
1/3-11 T2	Oil	3294.50	54423T	9.82	8.29	11.71	54.38	57.74	19.30	46.71	54.05	59.78	37.60	32.66	0.84	0.61
1/3-11 T2	Oil	3294.50	54424T	10.56	8.84	12.67	56.29	58.40	19.85	45.11	54.49	59.60	37.58	33.29	0.81	0.59
1/3-11 T2	Oil	3294.50	54425T	9.51	8.65	11.82	55.85	58.14	19.29	46.62	53.54	59.84	37.04	33.48	0.81	0.62
1/3-11 T2	Oil	3294.50	54426T	10.14	8.74	12.51	54.85	57.72	19.70	45.11	52.44	59.71	36.96	32.74	0.81	0.59
1/3-11 T2	Oil	3294.50	54427T	9.75	8.82	12.24	55.21	58.59	19.56	45.57	53.33	58.64	36.92	33.27	0.81	0.59

- % 23:3 23:3/(23:3+30αβ)*100
- % 28αβ 28αβ/(28αβ+30αβ)*100
- % 30D 30D/(30D+30αβ)*100
- % 27Ts 27Ts/(27Ts+27Tm)*100
- % 22S (32αβS/(32αβS+32αβR))*100
- % 29Ts (29Ts/29Ts+30αβ)*100
- % 20S (29ααS/29ααS+29ααR)*100
- % ββ (29ββ(R+S)/(29ββ(R+S)+29αα(R+S))*100
- % 27dβS 27dβS/(27dβS+27αα(R+S))*100

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% C27 $(27\beta\beta(R+S)/(27\beta\beta(R+S)+28\beta\beta(R+S)+29\beta\beta(R+S))*100$

% C29 $(29\beta\beta(R+S)/(27\beta\beta(R+S)+28\beta\beta(R+S)+29\beta\beta(R+S))*100$

28/29 $(28\alpha\alpha(R+S)+28\beta\beta(R+S))/(29\alpha\alpha(R+S)+29\beta\beta(R+S))$

24:4/23:3 24:4/23:3



Table 6. GCMS SIR of aromatic compounds (parameters)

Well	Sample type	Lower Depth (m)	APT ID	AROM2	Crack1	Crack2	MSAro1	MSAro2	MSAro3	MSAro4	MSAro5	MSAro6	MSAro7	MSAro8	MSAro9
1/3-11	DC	2500	53991	0.46	0.27	0.09	0.11	2.03	0.49	1.26	3.39	0.81	0.06	0.69	0.49
1/3-11	DC	3192	53994	0.52	0.60	0.34	0.14	3.37	0.52	1.37	4.18	1.59	0.06	10.65	0.41
1/3-11	DC	3240	53999	0.60	0.58	0.33	0.16	3.03	0.45	1.27	3.47	1.18	0.07	6.18	0.54
1/3-11 T2	DC	2600	54002	0.27	0.46	0.17	0.12	2.52	0.48	1.31	3.49	0.93	0.06	1.09	0.23
1/3-11 T2	DC	3215	54003	0.65	0.55	0.26	0.13	3.09	0.40	1.26	3.60	1.64	0.07	8.77	0.60
1/3-11 T2	DC	3398	54005	0.64	0.69	0.43	0.19	2.72	0.48	1.47	3.86	0.48	0.06	5.24	0.56
1/3-11 T2	DC	3491	54007	0.47	0.69	0.39	0.14	2.61	0.54	1.26	3.51	1.29	0.05	13.13	0.38
1/3-11	Mud	1309	54009	0.64	0.27	0.14	0.15	2.50	0.51	1.39	3.82	1.32	0.09	14.64	0.71
1/3-11	Mud	3100	54010	0.59	0.36	0.18	0.16	2.51	0.52	1.52	3.70	1.30	0.08	12.82	0.66
1/3-11	Mud	3289	54011	0.56	0.47	0.22	0.18	2.35	0.54	1.52	3.79	1.21	0.08	13.82	0.56
1/3-11 T2	Mud	1268.50	54012	0.52	0.48	0.22	0.16	2.85	0.54	1.58	3.79	1.38	0.07	10.24	0.56
1/3-11 T2	Mud	3200	54013	0.49	0.53	0.24	0.16	2.54	0.54	1.53	3.79	1.19	0.07	14.10	0.45
1/3-11 T2	Mud	3595	54014	0.45	0.52	0.27	0.17	2.82	0.54	1.57	3.52	1.25	0.06	11.99	0.46
1/3-11 T2	COPL	3295.61	54307	0.65	0.61	0.34	0.22	3.41	0.41	1.49	4.67	1.23	0.08	14.91	0.64
1/3-11 T2	COPL	3296.23	54308	0.68	0.59	0.32	0.22	3.46	0.41	1.47	4.48	1.21	0.08	15.60	0.67
1/3-11 T2	COPL	3414.02	54309	0.86	0.37	0.22	0.20	2.19	0.45	1.58	3.94	0.39	0.07	4.23	0.80
1/3-11 T2	Oil	3294.50	54423T	0.70	0.60	0.33	0.26	3.47	0.40	1.52	4.75	1.13	0.09	18.09	0.69
1/3-11 T2	Oil	3294.50	54424T	0.70	0.59	0.32	0.26	3.64	0.41	1.55	4.82	1.15	0.09	18.34	0.70
1/3-11 T2	Oil	3294.50	54425T	0.70	0.60	0.33	0.25	3.71	0.42	1.55	4.70	1.17	0.09	18.44	0.69
1/3-11 T2	Oil	3294.50	54426T	0.70	0.58	0.32	0.25	3.67	0.41	1.52	4.78	1.18	0.08	18.86	0.70
1/3-11 T2	Oil	3294.50	54427T	0.70	0.58	0.32	0.26	3.58	0.41	1.53	4.70	1.14	0.09	18.46	0.70

AROM2: $(C_{20}TA+C_{21}TA+SC_{26}TA+RC_{26}TA+SC_{27}TA+SC_{28}TA+RC_{27}TA+RC_{28}TA)/(C_{20}TA+C_{21}TA+SC_{26}TA+RC_{26}TA+SC_{27}TA+SC_{28}TA+RC_{27}TA+RC_{28}TA+C_{21}MA+C_{22}MA+\beta SC_{27}MA+\beta RC_{27}MA+\beta RC_{27}DMA+\alpha SC_{27}MA+\beta SC_{28}MA+\beta SC_{28}DMA+\alpha RC_{27}DMA+\alpha SC_{27}DMA+\alpha RC_{27}MA+\alpha SC_{28}MA+\alpha SC_{29}MA+\alpha RC_{29}MA)$

Crack1: $(C_{20}TA)/(C_{20}TA+RC_{28}TA)$

Crack2: $(C_{20}TA+C_{21}TA)/(C_{20}TA+C_{21}TA+SC_{26}TA+RC_{26}TA+SC_{27}TA+SC_{28}TA+RC_{27}TA+RC_{28}TA)$

MSAro1: $(C_{21}MA+C_{22}MA)/(C_{21}MA+C_{22}MA+\beta SC_{27}MA+\beta RC_{27}MA+\beta RC_{27}DMA+\alpha SC_{27}MA+\beta SC_{28}MA+\beta SC_{28}DMA+\alpha RC_{27}DMA+\alpha SC_{27}DMA+\alpha RC_{27}MA+\alpha SC_{28}MA+\alpha SC_{29}MA+\alpha RC_{29}MA)$

MSAro2: 4-MDBT/1-MDBT

MSAro3: $(2-MP+3-MP)/(1-MP+2-MP+3-MP+9-MP)$

MSAro4: 2-MN/1-MN

MSAro5: $(2,6-DMN+2,7-DMN)/1,5-DMN$



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MSAro6: 4-MDBT/DBT

MSAro7: DBT/P

MSAro8: 3-MP/Retene

MSAro9: $RC_{28}TA / (RC_{28}TA + \alpha RC_{28}MA + \beta RC_{29}MA + \beta RC_{29}DMA)$



Table 7. Thermal Extraction GC (peak area)

Well	Sample type	Lower Depth (m)	APT ID	n-C10	n-C11	n-C12	n-C13	n-C14	n-C15	n-C16	n-C17	Pr	n-C18	Ph	n-C19	n-C20	n-C21	n-C22	n-C23	n-C24
1/3-11	DC	3192	53994	0.00e0	0.00e0	1.59e4	3.15e4	1.81e5	2.31e5	1.46e5	4.40e4	3.09e4	1.34e3	3.78e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11	DC	3216	53997	0.00e0	0.00e0	7.82e4	2.16e4	2.06e5	5.41e5	4.74e5	2.72e5	1.60e5	6.15e4	4.51e4	5.52e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3294.55	54306	0.00e0	0.00e0	7.19e3	3.42e4	1.31e5	1.99e5	1.58e5	9.71e4	5.65e4	2.99e4	1.75e4	7.11e3	2.24e3	8.55e2	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3295.61	54307	0.00e0	0.00e0	8.02e3	2.46e4	9.45e4	1.36e5	8.34e4	2.80e4	2.54e4	1.62e3	4.75e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3296.23	54308	0.00e0	0.00e0	8.09e3	2.66e4	8.91e4	1.27e5	8.12e4	4.01e4	2.44e4	9.81e3	6.17e3	2.33e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3414.02	54309	0.00e0	0.00e0	2.50e4	3.80e4	1.38e5	1.78e5	1.05e5	4.95e4	3.36e4	9.47e3	5.58e3	1.41e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3414.56	54310	0.00e0	0.00e0	1.01e3	9.32e3	6.43e4	1.22e5	9.49e4	5.43e4	3.55e4	1.36e4	9.24e3	2.49e3	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0

Table 7. continued, Thermal Extraction GC (peak area)

Well	Sample type	Lower Depth (m)	APT ID	n-C25	n-C26	n-C27	n-C28	n-C29	n-C30	n-C31	n-C32	n-C33	n-C34	n-C35	n-C36
1/3-11	DC	3192	53994	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11	DC	3216	53997	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3294.55	54306	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3295.61	54307	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3296.23	54308	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3414.02	54309	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0
1/3-11 T2	COPL	3414.56	54310	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0	0.00e0



Table 8. Extraction, Asphaltene precipitation and Iatroscan data

Well	Sample type	Lower Depth (m)	APT ID	Rock weight (g)	EOM (mg)	EOM (mg/kg Rock)	SAT (wt% of EOM/OH)	ARO (wt% of EOM/OH)	POL (wt% of EOM/OH)	ASP (wt% of EOM/OH)	HC (wt% of EOM/OH)
1/3-11	DC	2500	53991	9.808	146	14886	90.1	0.6	5.1	4.2	90.7
1/3-11	DC	2520	53992	9.510	382	40169	95.4	0.5	2.0	2.1	95.9
1/3-11	DC	3186	53993	13.644	506	37085	96.0	0.4	1.2	2.4	96.4
1/3-11	DC	3192	53994	6.418	239	37238	94.7	0.6	3.6	1.2	95.3
1/3-11	DC	3204	53995	7.227	195	26983	91.8	0.5	6.6	1.0	92.3
1/3-11	DC	3210	53996	9.182	328	35721	93.8	0.4	4.4	1.4	94.2
1/3-11	DC	3216	53997	10.233	251	24528	92.5	0.4	4.1	3.0	92.9
1/3-11	DC	3234	53998	4.231	106	25053	92.6	0.3	4.1	2.9	92.9
1/3-11	DC	3240	53999	8.462	298	35216	92.7	0.5	4.7	2.1	93.2
1/3-11	DC	3270	54000	11.611	194	16709	91.8	0.5	5.3	2.5	92.2
1/3-11	DC	3276	54001	5.205	151	29008	91.7	0.6	5.6	2.1	92.3
1/3-11 T2	DC	2600	54002	4.900	131	26733	92.1	0.8	4.7	2.4	92.9
1/3-11 T2	DC	3215	54003	7.237	136	18793	79.9	1.1	12.3	6.7	81.0
1/3-11 T2	DC	3374	54004	5.696	203	35637	89.6	0.3	5.0	5.0	90.0
1/3-11 T2	DC	3398	54005	4.731	197	41641	95.4	0.6	2.5	1.5	95.9
1/3-11 T2	DC	3467	54006	5.067	174	34340	93.5	0.3	4.1	2.2	93.7
1/3-11 T2	DC	3491	54007	3.666	160	43641	92.2	0.4	5.0	2.4	92.6
1/3-11 T2	DC	3512	54008	9.646	259	26851	92.9	0.4	3.9	2.9	93.2
1/3-11	Mud	1309	54009		106		95.7	0.3	2.8	1.2	96.0
1/3-11	Mud	3100	54010		108		97.2	0.3	1.4	1.0	97.6
1/3-11	Mud	3289	54011		104		97.4	0.3	1.0	1.3	97.6
1/3-11 T2	Mud	1268.50	54012		107		96.4	0.3	2.7	0.6	96.7
1/3-11 T2	Mud	3200	54013		99		97.7	0.2	1.1	1.0	97.9
1/3-11 T2	Mud	3595	54014		100		97.4	0.7	0.7	1.1	98.2
1/3-11 T2	COPL	3294.55	54306	5.120	81	15742	84.2	10.3	1.8	3.7	94.5
1/3-11 T2	COPL	3295.61	54307	5.960	85	14245	91.7	3.2	1.7	3.3	94.9
1/3-11 T2	COPL	3296.23	54308	4.060	44	10887	90.3	3.9	2.7	3.1	94.2
1/3-11 T2	COPL	3414.02	54309	5.700	21	3614	83.5	3.5	3.4	9.7	86.9



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Well	Sample type	Lower Depth (m)	APT ID	Rock weight (g)	EOM (mg)	EOM (mg/kg Rock)	SAT (wt% of EOM/OH)	ARO (wt% of EOM/OH)	POE (wt% of EOM/OH)	ASP (wt% of EOM/OH)	HC (wt% of EOM/OH)
1/3-11 T2	COPL	3414.56	54310	5.100	47	9118	93.6	0.4	1.6	4.5	94.0
1/3-11 T2	Oil	3294.50	54423				77.1	17.9	3.2	1.8	95.0
1/3-11 T2	Oil	3294.50	54424				79.8	15.1	3.5	1.5	94.9
1/3-11 T2	Oil	3294.50	54425				81.8	14.3	1.9	2.0	96.1
1/3-11 T2	Oil	3294.50	54426				79.1	16.7	2.6	1.7	95.7
1/3-11 T2	Oil	3294.50	54427				74.6	20.7	3.1	1.5	95.3

Table 9. Density and topping

Well	Sample type	Lower Depth (m)	APT ID	Density (g/cm ³)	°API	Topped oil
1/3-11	Mud	1309	54009	0.826	39.9	
1/3-11	Mud	3100	54010	0.822	40.6	
1/3-11	Mud	3289	54011	0.822	40.7	
1/3-11 T2	Mud	1268.50	54012	0.826	39.9	
1/3-11 T2	Mud	3200	54013	0.822	40.7	
1/3-11 T2	Mud	3595	54014	0.819	41.3	
1/3-11 T2	Oil	3294.50	54423	0.837	37.5	88.6
1/3-11 T2	Oil	3294.50	54424	0.839	37.3	89.8
1/3-11 T2	Oil	3294.50	54425	0.838	37.5	90.1
1/3-11 T2	Oil	3294.50	54426	0.838	37.4	87.2
1/3-11 T2	Oil	3294.50	54427	0.838	37.4	86.7

Table 10. GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	IS 2,2,4-TMC5	n-C3	i-C4	n-C4	i-C5	n-C5	2,2-DMC4	CyC5	2,3-DMC4	2-MC5	3-MC5	n-C6	2,2-DMC5	MCyC5	2,4-DMC5	2,2,3-TMC4	Benz
1/3-11 T2	Oil	3294.50	54423	1.36e5	6.27e3	6.59e3	2.71e4	3.31e4	4.98e4	1.28e3	9.96e3	4.63e3	3.46e4	2.32e4	6.29e4	2.34e3	4.79e4	5.63e3	4.92e2	3.38e4
1/3-11 T2	Oil	3294.50	54424	1.38e5	7.01e3	7.34e3	2.65e4	3.14e4	4.71e4	1.28e3	9.17e3	4.64e3	3.29e4	2.23e4	5.99e4	2.26e3	4.59e4	5.39e3	4.50e2	3.23e4
1/3-11 T2	Oil	3294.50	54425	1.35e5	5.83e3	7.82e3	2.74e4	3.45e4	5.25e4	1.36e3	9.97e3	5.17e3	3.64e4	2.44e4	6.60e4	2.42e3	5.01e4	5.86e3	5.38e2	3.53e4
1/3-11 T2	Oil	3294.50	54426	1.40e5	8.69e3	8.60e3	3.12e4	3.52e4	5.30e4	1.31e3	1.02e4	5.01e3	3.59e4	2.41e4	6.54e4	2.35e3	4.94e4	5.73e3	5.22e2	3.51e4
1/3-11 T2	Oil	3294.50	54427	1.20e5	6.72e3	7.57e3	2.89e4	3.51e4	5.34e4	1.41e3	1.02e4	5.30e3	3.71e4	2.50e4	6.73e4	2.46e3	5.12e4	5.93e3	4.69e2	3.63e4

Table 10. continued, GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	3,3-DMC5	CyC6	2-MC6	2,3-DMC5	1,1-DMCyC5	3-MC6	o-1,3-DMCyC5	i-1,3-DMCyC5	3-EC5	i-1,2-DMCyC5	n-C7	o-1,2-DMCyC5	MCyC6	1,1,3-TMCyC5	ECyC5	2,5-DMC6	2,2,3-TMC5/2,4-DMC6
1/3-11 T2	Oil	3294.50	54423	1.51e3	6.21e4	2.98e4	1.09e4	6.06e3	3.33e4	1.27e4	1.22e4	3.58e3	2.41e4	8.53e4	0.00e0	1.29e5	9.27e3	8.25e3	6.49e3	7.79e3
1/3-11 T2	Oil	3294.50	54424	1.48e3	5.98e4	2.79e4	1.02e4	5.82e3	3.22e4	1.23e4	1.17e4	2.59e3	2.39e4	8.24e4	0.00e0	1.25e5	9.16e3	8.04e3	6.26e3	7.58e3
1/3-11 T2	Oil	3294.50	54425	1.67e3	6.50e4	3.12e4	1.14e4	6.52e3	3.50e4	1.35e4	1.28e4	3.22e3	2.52e4	8.97e4	0.00e0	1.36e5	9.91e3	8.66e3	6.78e3	8.21e3
1/3-11 T2	Oil	3294.50	54426	1.50e3	6.36e4	3.05e4	1.12e4	6.25e3	3.42e4	1.29e4	1.24e4	2.95e3	2.46e4	8.79e4	0.00e0	1.32e5	9.57e3	8.41e3	6.58e3	7.90e3
1/3-11 T2	Oil	3294.50	54427	1.60e3	6.61e4	3.16e4	1.15e4	6.53e3	3.56e4	1.36e4	1.29e4	3.60e3	2.63e4	9.08e4	0.00e0	1.36e5	9.89e3	8.73e3	6.86e3	8.23e3

Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 10. continued, GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	c-1,2,4-TMCyC5	3,3-DMC6	1,ε-1,2,3-TMCyC5	2,3,4-TMC5	Tol	2,3-DMC6	2-MC7	4-MC7	3-MC7	c-1,3-DMCyc6	i-1,4-DMCyc6	1,1-DMCyc6	i-1,2-DMCyc6	n-C8	E-CyC6	i-C9	E-Benz
1/3-11 T2	Oil	3294.50	54423	8.25e3	2.13e3	1.03e4	1.61e3	7.26e4	8.57e3	4.31e4	1.45e4	2.75e4	3.69e4	1.38e4	1.09e4	1.97e4	1.02e5	4.48e4	1.51e4	1.53e4
1/3-11 T2	Oil	3294.50	54424	7.96e3	2.00e3	9.93e3	1.59e3	7.02e4	8.53e3	4.15e4	1.41e4	2.39e4	3.83e4	1.35e4	1.05e4	1.91e4	9.91e4	4.34e4	1.48e4	1.50e4
1/3-11 T2	Oil	3294.50	54425	8.69e3	2.23e3	1.08e4	1.70e3	7.64e4	9.19e3	4.57e4	1.50e4	3.03e4	3.72e4	1.46e4	1.16e4	2.09e4	1.07e5	4.76e4	1.61e4	1.62e4
1/3-11 T2	Oil	3294.50	54426	8.40e3	2.19e3	1.05e4	1.65e3	7.49e4	8.74e3	4.38e4	1.48e4	2.86e4	3.64e4	1.41e4	1.12e4	2.00e4	1.03e5	4.54e4	1.53e4	1.56e4
1/3-11 T2	Oil	3294.50	54427	8.60e3	2.21e3	1.08e4	1.72e3	7.69e4	9.11e3	4.53e4	1.48e4	2.98e4	3.73e4	1.46e4	1.14e4	2.06e4	1.07e5	4.67e4	1.58e4	1.60e4

Table 10. continued, GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	m-Xyl	p-Xyl	4-MC8	2-MC8	3-MC8	o-Xyl	n-C9	i-C10	n-C10	i-C11	n-C11	n-C12	i-C13	i-C14	n-C13	i-C15	n-C14
1/3-11 T2	Oil	3294.50	54423	4.32e4	5.57e3	1.67e4	2.11e4	2.28e4	2.88e4	9.55e4	1.95e4	9.22e4	2.18e4	9.34e4	9.68e4	2.32e4	2.58e4	1.63e5	7.84e4	4.49e5
1/3-11 T2	Oil	3294.50	54424	4.16e4	5.66e3	1.58e4	2.04e4	2.23e4	2.80e4	9.37e4	1.98e4	9.11e4	2.11e4	9.23e4	9.54e4	2.27e4	2.70e4	1.58e5	7.51e4	4.25e5
1/3-11 T2	Oil	3294.50	54425	4.56e4	6.36e3	1.75e4	2.26e4	2.41e4	3.01e4	1.01e5	2.07e4	9.80e4	2.33e4	9.82e4	1.02e5	2.42e4	2.66e4	1.60e5	7.52e4	4.24e5
1/3-11 T2	Oil	3294.50	54426	4.38e4	5.69e3	1.70e4	2.13e4	2.29e4	2.92e4	9.65e4	2.03e4	9.42e4	2.19e4	9.33e4	9.62e4	2.25e4	2.49e4	1.48e5	6.93e4	3.94e5
1/3-11 T2	Oil	3294.50	54427	4.45e4	6.14e3	1.70e4	2.17e4	2.37e4	2.99e4	9.95e4	2.08e4	9.75e4	2.26e4	9.69e4	9.86e4	2.33e4	2.54e4	1.53e5	7.15e4	4.03e5

Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 10. continued, GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	i-C16	n-C15	n-C16	i-C18	n-C17	i-C19	n-C18	i-C20	n-C19	n-C20	n-C21	n-C22	n-C23	n-C24	n-C25	n-C26	n-C27
1/3-11 T2	Oil	3294.50	54423	2.34e5	6.76e5	4.69e5	1.30e5	2.94e5	1.37e5	1.25e5	5.80e4	6.86e4	4.87e4	4.01e4	3.54e4	3.15e4	2.80e4	2.29e4	2.15e4	1.73e4
1/3-11 T2	Oil	3294.50	54424	2.26e5	6.38e5	4.45e5	1.23e5	2.82e5	1.28e5	1.17e5	5.53e4	6.72e4	4.73e4	3.89e4	3.48e4	3.10e4	2.75e4	2.33e4	2.14e4	1.73e4
1/3-11 T2	Oil	3294.50	54425	2.23e5	6.33e5	4.47e5	1.27e5	2.82e5	1.37e5	1.20e5	5.64e4	6.92e4	5.09e4	4.15e4	3.79e4	3.35e4	2.95e4	2.46e4	2.32e4	1.86e4
1/3-11 T2	Oil	3294.50	54426	2.05e5	5.81e5	4.09e5	1.15e5	2.57e5	1.24e5	1.13e5	5.19e4	6.57e4	4.77e4	3.86e4	3.47e4	3.10e4	2.74e4	2.28e4	2.13e4	1.72e4
1/3-11 T2	Oil	3294.50	54427	2.06e5	5.99e5	4.18e5	1.16e5	2.66e5	1.34e5	1.16e5	5.51e4	6.69e4	4.92e4	4.09e4	3.68e4	3.24e4	2.88e4	2.40e4	2.38e4	1.82e4

Table 10. continued, GC of Whole Oil (peak area)

Well	Sample type	Lower Depth (m)	APT ID	n-C28	n-C29	n-C30	n-C31	n-C32	n-C33	n-C34	n-C35	n-C36
1/3-11 T2	Oil	3294.50	54423	1.38e4	1.34e4	1.21e4	1.12e4	9.65e3	7.88e3	7.00e3	6.88e3	1.77e4
1/3-11 T2	Oil	3294.50	54424	1.39e4	1.30e4	1.14e4	1.09e4	9.14e3	7.30e3	5.78e3	4.57e3	1.34e4
1/3-11 T2	Oil	3294.50	54425	1.44e4	1.41e4	1.27e4	1.20e4	1.04e4	8.56e3	7.28e3	7.79e3	1.34e4
1/3-11 T2	Oil	3294.50	54426	1.37e4	1.37e4	1.16e4	1.10e4	9.41e3	7.89e3	7.33e3	7.66e3	2.04e4
1/3-11 T2	Oil	3294.50	54427	1.46e4	1.44e4	1.27e4	1.19e4	1.01e4	8.32e3	7.79e3	8.01e3	1.98e4

Table 11. GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	IS 2,2,4-TMC5	n-C3	i-C4	n-C4	i-C5	n-C5	2,2-DMC4	CyC5	2,3-DMC4	2-MC5	3-MC5	n-C6	2,2-DMC5	MCyC5	2,4-DMC5	2,2,3-TMC4	Benz
1/3-11 T2	Oil	3294.50	54423	6.91e6	3.28e5	3.40e5	1.40e6	1.70e6	2.56e6	6.56e4	4.97e5	2.37e5	1.77e6	1.19e6	3.21e6	1.19e5	2.39e6	2.86e5	2.50e4	1.57e6
1/3-11 T2	Oil	3294.50	54424	7.45e6	3.89e5	4.03e5	1.45e6	1.71e6	2.57e6	6.95e4	4.86e5	2.52e5	1.79e6	1.21e6	3.25e6	1.22e5	2.43e6	2.91e5	2.43e4	1.59e6
1/3-11 T2	Oil	3294.50	54425	7.14e6	3.18e5	4.21e5	1.47e6	1.85e6	2.81e6	7.23e4	5.19e5	2.75e5	1.94e6	1.30e6	3.52e6	1.29e5	2.61e6	3.11e5	2.85e4	1.70e6
1/3-11 T2	Oil	3294.50	54426	7.57e6	4.84e5	4.73e5	1.72e6	1.92e6	2.90e6	7.10e4	5.43e5	2.73e5	1.95e6	1.31e6	3.56e6	1.27e5	2.63e6	3.10e5	2.83e4	1.73e6
1/3-11 T2	Oil	3294.50	54427	6.55e6	3.77e5	4.20e5	1.60e6	1.93e6	2.94e6	7.76e4	5.45e5	2.91e5	2.04e6	1.37e6	3.69e6	1.35e5	2.74e6	3.24e5	2.57e4	1.81e6

Table 11. continued, GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	3,3-DMC5	CyC6	2-MC6	2,3-DMC5	1,1-DMCyC5	3-MC6	o-1,3-DMCyC5	i-1,3-DMCyC5	3-EC5	i-1,2-DMCyC5	n-C7	o-1,2-DMCyC5	MCyC6	1,1,3-TMCyC5	ECyC5	2,5-DMC6	2,2,3-TMC5/2,4-DMC6
1/3-11 T2	Oil	3294.50	54423	7.68e4	3.10e6	1.51e6	5.53e5	3.03e5	1.70e6	6.36e5	6.07e5	1.82e5	1.20e6	4.35e6	0.00e0	6.44e6	4.63e5	4.12e5	3.30e5	3.96e5
1/3-11 T2	Oil	3294.50	54424	8.00e4	3.17e6	1.51e6	5.52e5	3.08e5	1.74e6	6.51e5	6.21e5	1.40e5	1.26e6	4.45e6	0.00e0	6.62e6	4.85e5	4.26e5	3.38e5	4.09e5
1/3-11 T2	Oil	3294.50	54425	8.86e4	3.38e6	1.65e6	6.08e5	3.39e5	1.86e6	7.00e5	6.66e5	1.71e5	1.31e6	4.76e6	0.00e0	7.09e6	5.15e5	4.51e5	3.59e5	4.35e5
1/3-11 T2	Oil	3294.50	54426	8.14e4	3.38e6	1.65e6	6.08e5	3.32e5	1.85e6	6.88e5	6.59e5	1.60e5	1.31e6	4.76e6	0.00e0	7.02e6	5.09e5	4.47e5	3.56e5	4.27e5
1/3-11 T2	Oil	3294.50	54427	8.77e4	3.54e6	1.73e6	6.28e5	3.50e5	1.95e6	7.27e5	6.93e5	1.97e5	1.41e6	4.96e6	0.00e0	7.28e6	5.30e5	4.68e5	3.74e5	4.49e5

Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 11. continued, GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	c-1,2,4-TMCyC5	3,3-DMC6	1,e-1,2,3-TMCyC5	2,3,4-TMC5	Tol	2,3-DMC6	2-MC7	4-MC7	3-MC7	c-1,3-DMCyC6	1-1,4-DMCyC6	1,1-DMCyC6	1-1,2-DMCyC6	n-C8	E-CyC6	i-C9	E-Benz
1/3-11 T2	Oil	3294.50	54423	4.12e5	1.08e5	5.13e5	8.20e4	3.40e6	4.36e5	2.19e6	7.35e5	1.40e6	1.84e6	6.89e5	5.43e5	9.83e5	5.18e6	2.24e6	7.64e5	7.22e5
1/3-11 T2	Oil	3294.50	54424	4.22e5	1.08e5	5.26e5	8.56e4	3.49e6	4.60e5	2.24e6	7.59e5	1.29e6	2.03e6	7.17e5	5.58e5	1.01e6	5.35e6	2.30e6	7.95e5	7.52e5
1/3-11 T2	Oil	3294.50	54425	4.52e5	1.18e5	5.64e5	9.02e4	3.73e6	4.87e5	2.42e6	7.93e5	1.60e6	1.94e6	7.59e5	6.05e5	1.09e6	5.69e6	2.47e6	8.48e5	8.00e5
1/3-11 T2	Oil	3294.50	54426	4.46e5	1.18e5	5.59e5	8.95e4	3.74e6	4.73e5	2.37e6	7.99e5	1.55e6	1.94e6	7.49e5	5.93e5	1.06e6	5.56e6	2.41e6	8.26e5	7.86e5
1/3-11 T2	Oil	3294.50	54427	4.61e5	1.20e5	5.78e5	9.37e4	3.87e6	4.97e5	2.47e6	8.08e5	1.63e6	2.00e6	7.81e5	6.13e5	1.10e6	5.83e6	2.50e6	8.61e5	8.10e5

Table 11. continued, GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	m-Xyl	p-Xyl	4-MC8	2-MC8	3-MC8	o-Xyl	n-C9	i-C10	n-C10	i-C11	n-C11	n-C12	i-C13	i-C14	n-C13	i-C15	n-C14
1/3-11 T2	Oil	3294.50	54423	2.04e6	2.63e5	8.48e5	1.07e6	1.16e6	1.36e6	4.85e6	9.87e5	4.67e6	1.10e6	4.72e6	4.89e6	1.17e6	1.30e6	8.20e6	3.95e6	2.26e7
1/3-11 T2	Oil	3294.50	54424	2.09e6	2.84e5	8.52e5	1.10e6	1.20e6	1.40e6	5.05e6	1.06e6	4.90e6	1.13e6	4.95e6	5.12e6	1.21e6	1.44e6	8.44e6	4.02e6	2.28e7
1/3-11 T2	Oil	3294.50	54425	2.25e6	3.13e5	9.26e5	1.19e6	1.27e6	1.48e6	5.35e6	1.09e6	5.17e6	1.23e6	5.18e6	5.35e6	1.27e6	1.40e6	8.43e6	3.95e6	2.23e7
1/3-11 T2	Oil	3294.50	54426	2.20e6	2.86e5	9.18e5	1.15e6	1.24e6	1.47e6	5.21e6	1.09e6	5.08e6	1.18e6	5.02e6	5.17e6	1.21e6	1.34e6	7.96e6	3.72e6	2.11e7
1/3-11 T2	Oil	3294.50	54427	2.26e6	3.12e5	9.23e5	1.18e6	1.29e6	1.52e6	5.42e6	1.13e6	5.30e6	1.23e6	5.26e6	5.35e6	1.26e6	1.38e6	8.30e6	3.87e6	2.18e7

Table 11. continued, GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	i-C16	n-C15	n-C16	i-C18	n-C17	i-C19	n-C18	i-C20	n-C19	n-C20	n-C21	n-C22	n-C23	n-C24	n-C25	n-C26	n-C27
1/3-11 T2	Oil	3294.50	54423	1.18e7	3.41e7	2.36e7	6.52e6	1.48e7	6.88e6	6.28e6	2.92e6	3.45e6	2.45e6	2.02e6	1.78e6	1.58e6	1.41e6	1.15e6	1.08e6	8.66e5
1/3-11 T2	Oil	3294.50	54424	1.21e7	3.41e7	2.38e7	6.57e6	1.51e7	6.84e6	6.27e6	2.95e6	3.59e6	2.53e6	2.07e6	1.86e6	1.65e6	1.47e6	1.24e6	1.14e6	9.23e5
1/3-11 T2	Oil	3294.50	54425	1.17e7	3.33e7	2.35e7	6.67e6	1.48e7	7.17e6	6.30e6	2.95e6	3.63e6	2.67e6	2.18e6	1.99e6	1.75e6	1.54e6	1.29e6	1.22e6	9.70e5
1/3-11 T2	Oil	3294.50	54426	1.10e7	3.12e7	2.19e7	6.16e6	1.38e7	6.67e6	6.05e6	2.77e6	3.52e6	2.55e6	2.06e6	1.85e6	1.66e6	1.47e6	1.22e6	1.14e6	9.16e5
1/3-11 T2	Oil	3294.50	54427	1.11e7	3.24e7	2.26e7	6.26e6	1.44e7	7.24e6	6.27e6	2.97e6	3.62e6	2.65e6	2.21e6	1.99e6	1.75e6	1.55e6	1.30e6	1.28e6	9.79e5

Table 11. continued, GC of Whole Oil (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	n-C28	n-C29	n-C30	n-C31	n-C32	n-C33	n-C34	n-C35	n-C36
1/3-11 T2	Oil	3294.50	54423	6.90e5	6.74e5	6.07e5	5.61e5	4.84e5	3.95e5	3.51e5	3.45e5	8.88e5
1/3-11 T2	Oil	3294.50	54424	7.40e5	6.92e5	6.05e5	5.81e5	4.87e5	3.89e5	3.08e5	2.43e5	7.13e5
1/3-11 T2	Oil	3294.50	54425	7.54e5	7.36e5	6.64e5	6.25e5	5.41e5	4.47e5	3.80e5	4.07e5	7.00e5
1/3-11 T2	Oil	3294.50	54426	7.30e5	7.30e5	6.17e5	5.85e5	5.02e5	4.21e5	3.91e5	4.09e5	1.09e6
1/3-11 T2	Oil	3294.50	54427	7.86e5	7.77e5	6.83e5	6.40e5	5.43e5	4.48e5	4.19e5	4.31e5	1.07e6

Table 12. GC of saturated compounds (peak area)

Well	Sample type	Lower Depth (m)	APT ID	n-C10	n-C11	n-C12	i-C13	i-C14	n-C13	i-C15	n-C14	i-C16	n-C15	n-C16	i-C18	n-C17	Pr	n-C18	Ph	n-C19
1/3-11	Mud	1309	54009	2.11e5	1.86e6	4.09e6	8.57e5	1.93e6	1.40e7	1.77e7	9.05e7	6.42e7	1.80e8	1.33e8	4.05e7	8.29e7	4.50e7	3.04e7	1.59e7	7.63e6
1/3-11	Mud	3100	54010	1.33e5	1.43e6	3.63e6	7.88e5	1.85e6	1.84e7	2.31e7	1.22e8	7.69e7	2.12e8	1.62e8	5.25e7	9.57e7	4.91e7	3.21e7	1.66e7	7.45e6
1/3-11	Mud	3289	54011	1.02e5	1.39e6	3.34e6	6.78e5	1.64e6	2.23e7	2.16e7	1.22e8	7.06e7	2.00e8	1.56e8	4.90e7	9.38e7	4.79e7	3.15e7	1.71e7	7.20e6
1/3-11 T2	Mud	1268.50	54012	1.32e5	1.33e6	3.46e6	5.60e5	1.50e6	2.76e7	2.07e7	1.23e8	6.82e7	1.96e8	1.51e8	4.88e7	9.05e7	4.68e7	2.93e7	1.55e7	6.42e6
1/3-11 T2	Mud	3200	54013	9.94e4	1.20e6	3.48e6	5.82e5	1.61e6	2.50e7	2.21e7	1.22e8	7.07e7	2.02e8	1.49e8	4.80e7	9.14e7	4.63e7	3.04e7	1.59e7	6.97e6
1/3-11 T2	Mud	3595	54014	4.08e4	8.55e5	2.84e6	5.21e5	1.59e6	2.41e7	2.33e7	1.31e8	7.51e7	2.05e8	1.53e8	4.60e7	8.95e7	4.43e7	2.94e7	1.48e7	6.60e6
1/3-11 T2	Oil	3294.50	54423	7.38e6	1.17e7	1.35e7	3.10e6	3.35e6	2.45e7	1.37e7	7.57e7	3.91e7	1.15e8	9.07e7	2.56e7	5.82e7	2.90e7	2.48e7	1.18e7	1.24e7
1/3-11 T2	Oil	3294.50	54424	1.04e7	1.32e7	1.38e7	3.16e6	3.33e6	2.41e7	1.32e7	7.35e7	3.70e7	1.14e8	8.66e7	2.49e7	5.60e7	2.80e7	2.42e7	1.15e7	1.24e7
1/3-11 T2	Oil	3294.50	54425	1.00e7	1.29e7	1.38e7	3.13e6	3.17e6	2.38e7	1.43e7	7.43e7	3.76e7	1.12e8	8.49e7	2.45e7	5.71e7	2.87e7	2.52e7	1.21e7	1.33e7
1/3-11 T2	Oil	3294.50	54426	7.87e6	1.24e7	1.38e7	3.15e6	3.14e6	2.34e7	1.26e7	7.03e7	3.58e7	1.08e8	8.43e7	2.44e7	5.56e7	2.79e7	2.45e7	1.17e7	1.30e7
1/3-11 T2	Oil	3294.50	54427	6.67e6	1.18e7	1.36e7	3.11e6	3.18e6	2.35e7	1.26e7	7.08e7	3.65e7	1.13e8	8.59e7	2.55e7	5.73e7	2.89e7	2.56e7	1.20e7	1.38e7



Table 12. continued, GC of saturated compounds (peak area)

Well	Sample type	Lower Depth (m)	APT ID	n-C20	n-C21	n-C22	n-C23	n-C24	n-C25	n-C26	n-C27	n-C28	n-C29	n-C30	n-C31	n-C32	n-C33	n-C34	n-C35	n-C36
1/3-11	Mud	1309	54009	2.49e6	1.08e6	4.67e5	2.77e5	1.57e5	1.07e5	8.55e4	5.57e4	4.75e4	4.24e4	2.77e4	2.53e4	2.80e4	9.85e3	2.46e4	0.00e0	0.00e0
1/3-11	Mud	3100	54010	2.12e6	9.39e5	4.19e5	2.33e5	1.34e5	9.04e4	7.75e4	5.24e4	4.52e4	4.17e4	2.99e4	2.38e4	2.74e4	8.64e3	1.08e4	0.00e0	0.00e0
1/3-11	Mud	3289	54011	2.10e6	8.46e5	3.87e5	2.21e5	1.38e5	9.29e4	8.76e4	5.12e4	4.63e4	3.67e4	2.69e4	2.16e4	3.01e4	6.99e3	5.87e3	0.00e0	0.00e0
1/3-11 T2	Mud	1268.50	54012	1.85e6	7.12e5	3.16e5	1.81e5	1.16e5	8.37e4	7.45e4	4.31e4	4.11e4	2.88e4	2.69e4	1.82e4	2.70e4	1.62e4	1.08e4	0.00e0	0.00e0
1/3-11 T2	Mud	3200	54013	2.08e6	9.05e5	4.40e5	2.63e5	1.66e5	1.05e5	8.79e4	4.96e4	4.72e4	3.57e4	3.37e4	1.71e4	2.96e4	1.68e4	0.00e0	0.00e0	0.00e0
1/3-11 T2	Mud	3595	54014	2.19e6	1.04e6	5.87e5	3.32e5	1.86e5	8.42e4	6.78e4	2.99e4	2.25e4	2.57e4	2.08e4	9.40e3	1.84e4	1.32e4	0.00e0	0.00e0	0.00e0
1/3-11 T2	Oil	3294.50	54423	9.69e6	7.87e6	7.04e6	6.24e6	5.48e6	4.84e6	4.24e6	3.49e6	2.86e6	2.62e6	2.34e6	2.16e6	2.00e6	1.61e6	1.69e6	1.14e6	8.02e5
1/3-11 T2	Oil	3294.50	54424	9.75e6	7.95e6	7.12e6	6.34e6	5.56e6	4.97e6	4.32e6	3.56e6	2.93e6	2.72e6	2.39e6	2.19e6	2.04e6	1.64e6	1.59e6	1.02e6	8.24e5
1/3-11 T2	Oil	3294.50	54425	1.07e7	8.74e6	7.84e6	6.96e6	6.12e6	5.44e6	4.78e6	3.92e6	3.29e6	2.97e6	2.62e6	2.42e6	2.25e6	1.78e6	1.88e6	1.23e6	9.30e5
1/3-11 T2	Oil	3294.50	54426	1.04e7	8.52e6	7.66e6	6.82e6	5.99e6	5.36e6	4.65e6	3.81e6	3.21e6	2.93e6	2.56e6	2.37e6	2.22e6	1.78e6	1.74e6	1.11e6	8.57e5
1/3-11 T2	Oil	3294.50	54427	1.12e7	9.17e6	8.23e6	7.34e6	6.44e6	5.74e6	5.00e6	4.13e6	3.30e6	3.13e6	2.76e6	2.54e6	2.35e6	1.80e6	1.79e6	1.10e6	7.74e5

Table 13. GC of saturated compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	n-C10	n-C11	n-C12	i-C13	i-C14	n-C13	i-C15	n-C14	i-C16	n-C15	n-C16	i-C18	n-C17	Pr	n-C18	Ph	n-C19
1/3-11	Mud	1309	54009	7.18e4	6.33e5	1.39e6	2.92e5	6.58e5	4.78e6	6.03e6	3.08e7	2.19e7	6.13e7	4.52e7	1.38e7	2.82e7	1.53e7	1.04e7	5.40e6	2.60e6
1/3-11	Mud	3100	54010	4.09e4	4.41e5	1.12e6	2.42e5	5.69e5	5.66e6	7.11e6	3.77e7	2.37e7	6.53e7	4.99e7	1.62e7	2.95e7	1.51e7	9.88e6	5.11e6	2.29e6
1/3-11	Mud	3289	54011	3.21e4	4.39e5	1.05e6	2.14e5	5.17e5	7.03e6	6.80e6	3.83e7	2.23e7	6.32e7	4.93e7	1.55e7	2.96e7	1.51e7	9.92e6	5.39e6	2.27e6
1/3-11 T2	Mud	1268.50	54012	4.23e4	4.25e5	1.11e6	1.79e5	4.80e5	8.84e6	6.63e6	3.94e7	2.19e7	6.29e7	4.82e7	1.56e7	2.90e7	1.50e7	9.38e6	4.98e6	2.06e6
1/3-11 T2	Mud	3200	54013	3.08e4	3.73e5	1.08e6	1.80e5	4.99e5	7.73e6	6.85e6	3.79e7	2.19e7	6.25e7	4.61e7	1.49e7	2.83e7	1.43e7	9.42e6	4.94e6	2.16e6
1/3-11 T2	Mud	3595	54014	1.25e4	2.62e5	8.70e5	1.60e5	4.88e5	7.37e6	7.15e6	4.03e7	2.30e7	6.26e7	4.68e7	1.41e7	2.74e7	1.36e7	9.01e6	4.54e6	2.02e6
1/3-11 T2	Oil	3294.50	54423	2.21e6	3.52e6	4.06e6	9.30e5	1.01e6	7.36e6	4.11e6	2.27e7	1.17e7	3.45e7	2.72e7	7.67e6	1.75e7	8.71e6	7.43e6	3.54e6	3.73e6
1/3-11 T2	Oil	3294.50	54424	3.20e6	4.07e6	4.25e6	9.71e5	1.02e6	7.41e6	4.05e6	2.26e7	1.14e7	3.51e7	2.66e7	7.66e6	1.72e7	8.60e6	7.44e6	3.54e6	3.81e6
1/3-11 T2	Oil	3294.50	54425	2.97e6	3.82e6	4.09e6	9.24e5	9.38e5	7.03e6	4.23e6	2.20e7	1.11e7	3.32e7	2.51e7	7.25e6	1.69e7	8.48e6	7.45e6	3.56e6	3.94e6
1/3-11 T2	Oil	3294.50	54426	2.45e6	3.85e6	4.30e6	9.79e5	9.78e5	7.29e6	3.93e6	2.19e7	1.12e7	3.36e7	2.62e7	7.60e6	1.73e7	8.68e6	7.63e6	3.63e6	4.05e6
1/3-11 T2	Oil	3294.50	54427	1.98e6	3.50e6	4.06e6	9.26e5	9.45e5	6.99e6	3.76e6	2.11e7	1.09e7	3.35e7	2.56e7	7.59e6	1.70e7	8.59e6	7.61e6	3.58e6	4.12e6

Table 13. continued, GC of saturated compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	n-C20	n-C21	n-C22	n-C23	n-C24	n-C25	n-C26	n-C27	n-C28	n-C29	n-C30	n-C31	n-C32	n-C33	n-C34	n-C35	n-C36
1/3-11	Mud	1309	54009	8.47e5	3.68e5	1.59e5	9.45e4	5.34e4	3.65e4	2.91e4	1.90e4	1.62e4	1.45e4	9.43e3	8.61e3	9.52e3	3.36e3	8.39e3	0.00e0	0.00e0
1/3-11	Mud	3100	54010	6.53e5	2.89e5	1.29e5	7.18e4	4.12e4	2.78e4	2.39e4	1.61e4	1.39e4	1.28e4	9.20e3	7.33e3	8.42e3	2.66e3	3.32e3	0.00e0	0.00e0
1/3-11	Mud	3289	54011	6.62e5	2.67e5	1.22e5	6.96e4	4.36e4	2.93e4	2.76e4	1.61e4	1.46e4	1.16e4	8.47e3	6.80e3	9.47e3	2.20e3	1.85e3	0.00e0	0.00e0
1/3-11 T2	Mud	1268.50	54012	5.93e5	2.28e5	1.01e5	5.78e4	3.73e4	2.68e4	2.39e4	1.38e4	1.32e4	9.23e3	8.63e3	5.82e3	8.65e3	5.20e3	3.45e3	0.00e0	0.00e0
1/3-11 T2	Mud	3200	54013	6.45e5	2.80e5	1.36e5	8.15e4	5.14e4	3.24e4	2.72e4	1.54e4	1.46e4	1.11e4	1.05e4	5.30e3	9.16e3	5.22e3	0.00e0	0.00e0	0.00e0
1/3-11 T2	Mud	3595	54014	6.71e5	3.19e5	1.80e5	1.02e5	5.69e4	2.58e4	2.08e4	9.14e3	6.89e3	7.87e3	6.37e3	2.88e3	5.65e3	4.04e3	0.00e0	0.00e0	0.00e0
1/3-11 T2	Oil	3294.50	54423	2.91e6	2.36e6	2.11e6	1.87e6	1.65e6	1.45e6	1.27e6	1.05e6	8.59e5	7.87e5	7.01e5	6.47e5	5.99e5	4.82e5	5.07e5	3.41e5	2.41e5
1/3-11 T2	Oil	3294.50	54424	3.00e6	2.45e6	2.19e6	1.95e6	1.71e6	1.53e6	1.33e6	1.10e6	9.02e5	8.37e5	7.36e5	6.73e5	6.27e5	5.03e5	4.88e5	3.15e5	2.54e5
1/3-11 T2	Oil	3294.50	54425	3.16e6	2.58e6	2.32e6	2.06e6	1.81e6	1.61e6	1.41e6	1.16e6	9.74e5	8.78e5	7.74e5	7.16e5	6.66e5	5.27e5	5.57e5	3.62e5	2.75e5
1/3-11 T2	Oil	3294.50	54426	3.24e6	2.65e6	2.38e6	2.12e6	1.86e6	1.67e6	1.45e6	1.19e6	9.98e5	9.13e5	7.96e5	7.36e5	6.90e5	5.55e5	5.42e5	3.46e5	2.67e5
1/3-11 T2	Oil	3294.50	54427	3.33e6	2.73e6	2.45e6	2.18e6	1.92e6	1.71e6	1.49e6	1.23e6	9.82e5	9.30e5	8.20e5	7.55e5	6.98e5	5.36e5	5.33e5	3.27e5	2.30e5



Table 14. GCMS SIR of saturated compounds (peak height)

m/e				177				191												
Well	Sample type	Lower Depth (m)	APT ID	25nor28αβ	25nor29αβ	25nor30αβ	25nor31αβ	19/3	20/3	21/3	23/3	24/3	25/3R	25/3S	24/4	26/3R	26/3S	28/3R	28/3S	29/3R
1/3-11	DC	2500	53991	0.00e0	0.00e0	0.00e0	1.04e5	2.75e5	7.82e4	5.28e4	4.65e4	2.28e4	1.42e4	1.10e4	6.47e4	1.07e4	8.59e3	0.00e0	0.00e0	0.00e0
1/3-11	DC	3192	53994	5.72e4	4.84e4	0.00e0	1.80e5	4.83e5	3.03e5	2.56e5	2.48e5	1.25e5	6.33e4	5.89e4	1.48e5	5.54e4	5.15e4	4.90e4	4.85e4	5.60e4
1/3-11	DC	3240	53999	8.90e4	6.74e4	4.29e4	2.00e5	6.70e5	4.27e5	3.43e5	3.64e5	1.71e5	9.27e4	8.32e4	2.17e5	7.32e4	6.94e4	5.37e4	5.45e4	6.41e4
1/3-11 T2	DC	2600	54002	4.99e4	9.29e4	6.88e4	2.73e5	4.58e5	1.63e5	1.23e5	1.31e5	7.96e4	3.93e4	3.01e4	2.10e5	2.87e4	2.49e4	2.32e4	1.60e4	2.25e4
1/3-11 T2	DC	3215	54003	1.20e6	1.05e6	6.31e5	9.64e5	6.54e5	4.88e5	6.00e5	7.53e5	4.03e5	2.50e5	2.23e5	5.65e5	1.93e5	1.62e5	1.95e5	1.69e5	2.24e5
1/3-11 T2	DC	3398	54005	9.38e4	1.21e5	4.85e4	2.60e5	4.51e5	2.91e5	2.99e5	3.39e5	1.43e5	8.05e4	7.89e4	1.83e5	6.95e4	6.30e4	7.26e4	6.66e4	8.51e4
1/3-11 T2	DC	3491	54007	8.97e4	7.69e4	4.80e4	1.85e5	5.24e5	3.18e5	3.78e5	4.62e5	1.98e5	9.33e4	9.02e4	2.07e5	8.85e4	7.79e4	8.02e4	7.37e4	8.94e4
1/3-11	Mud	1309	54009	0.00e0	0.00e0	0.00e0	1.92e4	1.96e5	1.21e5	9.97e4	7.68e4	3.82e4	1.77e4	1.83e4	3.80e4	1.54e4	1.46e4	8.16e3	8.10e3	9.45e3
1/3-11	Mud	3100	54010	0.00e0	0.00e0	0.00e0	1.48e4	1.82e5	1.01e5	7.40e4	6.90e4	3.04e4	1.42e4	1.27e4	3.76e4	1.07e4	1.19e4	6.27e3	7.48e3	8.70e3
1/3-11	Mud	3289	54011	0.00e0	0.00e0	0.00e0	1.97e4	1.81e5	9.35e4	6.89e4	6.23e4	2.93e4	1.75e4	1.37e4	3.30e4	1.24e4	1.08e4	9.53e3	6.53e3	1.02e4
1/3-11 T2	Mud	1268.50	54012	1.03e4	0.00e0	0.00e0	1.34e4	1.64e5	7.52e4	6.33e4	5.43e4	2.65e4	1.56e4	1.52e4	3.30e4	1.33e4	1.07e4	8.59e3	7.68e3	9.76e3
1/3-11 T2	Mud	3200	54013	0.00e0	0.00e0	0.00e0	1.43e4	1.69e5	9.14e4	6.76e4	7.28e4	2.91e4	1.65e4	1.54e4	3.40e4	1.29e4	1.23e4	9.33e3	7.62e3	7.91e3
1/3-11 T2	Mud	3595	54014	0.00e0	0.00e0	0.00e0	1.24e4	1.40e5	9.08e4	8.48e4	8.59e4	3.33e4	1.54e4	1.76e4	3.53e4	1.32e4	1.38e4	8.26e3	9.83e3	8.10e3
1/3-11 T2	COPL	3295.61	54307	5.60e5	5.60e5	4.33e5	9.04e5	6.31e5	6.69e5	9.38e5	1.36e6	8.17e5	4.44e5	4.41e5	9.12e5	4.02e5	3.94e5	3.65e5	3.37e5	4.87e5
1/3-11 T2	COPL	3296.23	54308	3.97e5	3.93e5	3.23e5	6.13e5	3.98e5	4.42e5	6.76e5	9.92e5	5.96e5	3.18e5	3.21e5	6.32e5	2.85e5	2.61e5	2.69e5	2.33e5	3.48e5
1/3-11 T2	COPL	3414.02	54309	1.73e6	5.44e5	3.81e5	7.79e5	2.77e5	2.49e5	3.46e5	3.37e5	1.86e5	9.14e4	8.12e4	3.25e5	9.23e4	8.91e4	5.70e4	4.72e4	8.27e4
1/3-11 T2	Oil	3294.50	54423T	3.26e5	4.01e5	3.17e5	5.58e5	3.08e5	3.79e5	6.11e5	7.68e5	4.99e5	2.65e5	2.58e5	4.68e5	2.37e5	2.19e5	2.07e5	2.01e5	2.65e5
1/3-11 T2	Oil	3294.50	54424T	3.43e5	3.96e5	3.36e5	5.38e5	3.04e5	3.54e5	5.82e5	8.05e5	5.14e5	2.63e5	2.70e5	4.72e5	2.52e5	2.17e5	2.26e5	2.12e5	2.97e5
1/3-11 T2	Oil	3294.50	54425T	3.12e5	3.72e5	3.18e5	5.33e5	2.70e5	3.45e5	5.59e5	7.21e5	4.82e5	2.46e5	2.39e5	4.44e5	2.24e5	2.16e5	2.10e5	2.16e5	2.95e5
1/3-11 T2	Oil	3294.50	54426T	4.14e5	4.98e5	4.32e5	6.80e5	3.67e5	4.17e5	7.29e5	9.88e5	6.20e5	2.99e5	3.20e5	5.85e5	3.06e5	2.77e5	2.66e5	2.63e5	3.64e5
1/3-11 T2	Oil	3294.50	54427T	4.09e5	5.19e5	4.33e5	7.21e5	3.59e5	4.52e5	7.47e5	9.80e5	6.22e5	3.12e5	3.25e5	5.83e5	2.96e5	2.79e5	2.82e5	2.64e5	3.88e5



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 14. continued, GCMS SIR of saturated compounds (peak height)

Well	Sample type	Lower Depth (m)	APT ID	293S	27Ts	27Tm	303R	303S	28αβ	25nor30αβ	29αβ	29Ts	30α	29βα	30α	30αβ	30βα	31αβS	31αβR	30G
1/3-11	DC	2500	53991	0.00e0	1.05e5	4.13e5	0.00e0	0.00e0	7.67e4	0.00e0	8.68e5	2.47e5	5.08e4	4.44e5	0.00e0	1.66e6	4.57e5	6.58e5	1.24e6	4.71e4
1/3-11	DC	3192	53994	6.41e4	3.37e5	3.06e5	6.90e4	6.88e4	1.62e5	4.38e4	1.36e6	4.61e5	1.69e5	1.96e5	2.10e5	2.29e6	3.02e5	1.20e6	9.78e5	1.95e5
1/3-11	DC	3240	53999	6.36e4	4.15e5	4.53e5	5.79e4	6.59e4	1.98e5	4.50e4	1.65e6	5.10e5	1.71e5	2.25e5	3.61e5	2.70e6	3.64e5	1.22e6	9.75e5	1.84e5
1/3-11 T2	DC	2600	54002	2.86e4	3.60e5	9.17e5	5.56e4	6.21e4	5.99e5	0.00e0	2.24e6	7.40e5	1.04e5	1.11e6	1.89e5	3.93e6	8.45e5	1.05e6	2.13e6	9.64e4
1/3-11 T2	DC	3215	54003	2.31e5	1.44e6	1.79e6	2.22e5	6.78e5	1.37e6	8.18e5	6.43e6	2.12e6	6.59e5	8.78e5	1.48e6	1.22e7	1.74e6	4.53e6	3.61e6	5.70e5
1/3-11 T2	DC	3398	54005	8.61e4	4.40e5	4.64e5	9.72e4	1.10e5	2.69e5	6.23e4	2.12e6	6.17e5	2.29e5	2.43e5	2.50e5	3.37e6	4.36e5	1.84e6	1.39e6	2.98e5
1/3-11 T2	DC	3491	54007	8.44e4	4.20e5	4.15e5	7.97e4	7.39e4	2.19e5	4.66e4	1.56e6	4.90e5	1.67e5	1.83e5	2.13e5	2.46e6	3.08e5	1.19e6	9.23e5	1.82e5
1/3-11	Mud	1309	54009	1.05e4	5.44e4	5.26e4	0.00e0	0.00e0	1.98e4	0.00e0	1.60e5	4.80e4	1.52e4	1.76e4	0.00e0	2.45e5	2.47e4	7.95e4	6.08e4	1.26e4
1/3-11	Mud	3100	54010	0.00e0	4.59e4	4.36e4	0.00e0	0.00e0	2.00e4	0.00e0	1.17e5	4.05e4	1.22e4	1.35e4	0.00e0	1.80e5	1.93e4	5.73e4	4.78e4	9.45e3
1/3-11	Mud	3289	54011	9.72e3	5.20e4	5.57e4	0.00e0	0.00e0	2.79e4	0.00e0	1.74e5	5.23e4	1.45e4	1.82e4	0.00e0	2.77e5	3.15e4	9.90e4	7.34e4	1.30e4
1/3-11 T2	Mud	1268.50	54012	6.98e3	4.86e4	4.90e4	0.00e0	0.00e0	2.08e4	0.00e0	1.25e5	3.54e4	1.11e4	1.30e4	0.00e0	1.91e5	2.15e4	6.28e4	4.77e4	1.12e4
1/3-11 T2	Mud	3200	54013	0.00e0	4.28e4	5.05e4	0.00e0	0.00e0	2.52e4	0.00e0	1.37e5	4.08e4	1.25e4	1.60e4	0.00e0	1.96e5	2.13e4	6.11e4	4.89e4	9.19e3
1/3-11 T2	Mud	3595	54014	7.69e3	4.27e4	4.08e4	0.00e0	0.00e0	1.89e4	0.00e0	9.90e4	3.43e4	1.05e4	1.16e4	0.00e0	1.55e5	1.64e4	4.95e4	3.43e4	7.28e3
1/3-11 T2	COPL	3295.61	54307	4.79e5	2.66e6	2.47e6	3.93e5	4.33e5	1.12e6	5.60e5	6.09e6	2.62e6	1.26e6	7.49e5	1.28e6	1.14e7	1.48e6	4.25e6	3.14e6	5.26e5
1/3-11 T2	COPL	3296.23	54308	3.45e5	1.79e6	1.70e6	2.73e5	3.10e5	7.69e5	4.19e5	4.31e6	1.87e6	9.38e5	5.30e5	9.35e5	8.15e6	1.07e6	2.97e6	2.16e6	3.70e5
1/3-11 T2	COPL	3414.02	54309	7.12e4	6.71e5	1.37e6	9.06e4	2.71e5	8.56e5	4.93e5	4.57e6	1.37e6	4.81e5	6.40e5	7.80e6	1.01e7	1.76e6	2.60e6	1.73e6	2.40e5
1/3-11 T2	Oil	3294.50	54423T	2.85e5	1.71e6	1.43e6	2.36e5	2.49e5	6.38e5	4.47e5	3.42e6	1.69e6	9.36e5	4.73e5	1.05e6	7.06e6	1.01e6	2.45e6	1.75e6	3.15e5
1/3-11 T2	Oil	3294.50	54424T	2.89e5	1.75e6	1.36e6	2.45e5	2.52e5	6.61e5	4.27e5	3.28e6	1.69e6	9.90e5	4.91e5	1.06e6	6.82e6	9.53e5	2.52e6	1.81e6	3.08e5
1/3-11 T2	Oil	3294.50	54425T	2.82e5	1.65e6	1.31e6	2.41e5	2.54e5	6.50e5	4.46e5	3.19e6	1.64e6	9.20e5	4.59e5	1.03e6	6.86e6	9.62e5	2.53e6	1.76e6	3.09e5
1/3-11 T2	Oil	3294.50	54426T	3.65e5	2.13e6	1.76e6	3.13e5	3.19e5	8.38e5	5.61e5	4.16e6	2.15e6	1.25e6	6.18e5	1.32e6	8.75e6	1.22e6	3.17e6	2.30e6	3.81e5
1/3-11 T2	Oil	3294.50	54427T	4.07e5	2.30e6	1.86e6	3.25e5	3.42e5	8.77e5	5.56e5	4.32e6	2.21e6	1.27e6	6.22e5	1.40e6	9.07e6	1.36e6	3.35e6	2.34e6	4.02e5



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 14. continued, GCMS SIR of saturated compounds (peak height)

Well	Sample type	Lower Depth (m)	APT ID	191										217							
				31βo	32αβS	32αβR	33αβS	33αβR	34αβS	34αβR	35αβS	35αβR	21αα	21ββ	22αα	22ββ	27αβS	27αβR	27ααR	27ααS	
1/3-11	DC	2500	53991	3.10e5	1.49e5	3.34e5	8.21e4	1.25e5	5.86e4	7.21e4	3.92e4	4.93e4	3.55e4	3.83e4	1.47e4	2.10e4	4.06e4	3.11e4	1.20e4	1.37e4	
1/3-11	DC	3192	53994	2.27e5	8.24e5	5.92e5	6.88e5	5.01e5	4.22e5	2.98e5	3.58e5	2.49e5	1.68e5	1.42e5	6.29e4	6.54e4	1.99e5	1.25e5	4.92e4	6.54e4	
1/3-11	DC	3240	53999	2.09e5	8.07e5	5.75e5	6.23e5	4.39e5	3.53e5	2.46e5	2.67e5	1.92e5	2.43e5	1.88e5	9.86e4	9.60e4	2.80e5	1.66e5	6.81e4	8.87e4	
1/3-11 T2	DC	2600	54002	5.13e5	2.65e5	5.06e5	1.26e5	1.76e5	7.47e4	1.10e5	5.91e4	6.29e4	1.11e5	1.14e5	4.39e4	5.70e4	1.39e5	9.14e4	3.74e4	3.86e4	
1/3-11 T2	DC	3215	54003	9.88e5	2.94e6	2.13e6	2.39e6	1.67e6	1.55e6	1.07e6	1.45e6	1.04e6	5.20e5	4.65e5	2.77e5	2.50e5	8.41e5	5.23e5	2.27e5	2.99e5	
1/3-11 T2	DC	3398	54005	3.37e5	1.30e6	8.87e5	1.03e6	6.95e5	6.28e5	4.57e5	5.25e5	3.57e5	1.67e5	1.23e5	6.45e4	6.42e4	2.89e5	1.67e5	6.85e4	1.01e5	
1/3-11 T2	DC	3491	54007	2.09e5	8.29e5	5.92e5	6.35e5	4.35e5	3.64e5	2.61e5	3.10e5	2.04e5	2.05e5	1.64e5	8.03e4	8.44e4	3.20e5	1.90e5	7.48e4	1.06e5	
1/3-11	Mud	1309	54009	1.28e4	4.46e4	3.46e4	3.54e4	2.32e4	1.71e4	1.21e4	1.01e4	9.18e3	5.33e4	3.72e4	1.92e4	2.05e4	3.84e4	2.25e4	9.51e3	1.15e4	
1/3-11	Mud	3100	54010	9.90e3	3.21e4	2.19e4	2.47e4	1.53e4	1.21e4	9.09e3	9.95e3	8.61e3	4.71e4	3.45e4	1.84e4	1.53e4	3.18e4	1.60e4	7.04e3	8.11e3	
1/3-11	Mud	3289	54011	1.74e4	6.31e4	5.36e4	5.19e4	3.43e4	2.71e4	2.15e4	2.23e4	1.50e4	4.50e4	3.21e4	1.54e4	1.51e4	3.54e4	2.07e4	8.47e3	1.06e4	
1/3-11 T2	Mud	1268.50	54012	1.27e4	3.64e4	2.69e4	2.86e4	1.87e4	1.56e4	9.43e3	1.21e4	0.00e0	3.37e4	3.00e4	1.54e4	1.38e4	3.63e4	1.75e4	8.39e3	1.15e4	
1/3-11 T2	Mud	3200	54013	9.36e3	3.63e4	2.22e4	2.32e4	1.66e4	1.40e4	1.17e4	1.01e4	8.59e3	4.11e4	3.42e4	1.57e4	1.60e4	3.36e4	1.89e4	7.89e3	9.64e3	
1/3-11 T2	Mud	3595	54014	7.55e3	2.50e4	1.87e4	1.78e4	1.43e4	9.35e3	7.23e3	0.00e0	0.00e0	4.07e4	2.71e4	1.38e4	1.39e4	3.81e4	2.07e4	7.05e3	1.03e4	
1/3-11 T2	COPL	3295.61	54307	6.68e5	2.64e6	1.84e6	1.76e6	1.21e6	1.03e6	6.64e5	8.09e5	5.32e5	1.03e6	1.07e6	7.07e5	5.32e5	2.79e6	1.70e6	6.84e5	9.00e5	
1/3-11 T2	COPL	3296.23	54308	4.92e5	1.94e6	1.36e6	1.30e6	8.35e5	7.70e5	5.16e5	6.08e5	4.23e5	7.57e5	7.94e5	5.36e5	3.90e5	1.92e6	1.19e6	4.64e5	6.15e5	
1/3-11 T2	COPL	3414.02	54309	6.24e5	1.36e6	9.39e5	7.11e5	4.64e5	5.18e5	3.37e5	2.92e5	1.87e5	1.57e5	1.67e5	7.50e4	6.80e4	3.80e5	2.30e5	1.11e5	1.27e5	
1/3-11 T2	Oil	3294.50	54423T	4.43e5	1.53e6	1.12e6	1.04e6	6.70e5	5.96e5	3.88e5	4.37e5	2.96e5	7.58e5	8.08e5	5.29e5	3.48e5	1.87e6	1.09e6	4.77e5	6.11e5	
1/3-11 T2	Oil	3294.50	54424T	4.34e5	1.54e6	1.10e6	1.05e6	6.85e5	6.15e5	4.16e5	4.73e5	3.09e5	7.54e5	7.88e5	5.37e5	3.55e5	1.86e6	1.17e6	4.60e5	6.08e5	
1/3-11 T2	Oil	3294.50	54425T	4.57e5	1.57e6	1.13e6	1.07e6	7.09e5	6.39e5	4.39e5	5.09e5	3.26e5	6.87e5	7.52e5	4.97e5	3.23e5	1.85e6	1.09e6	4.50e5	5.78e5	
1/3-11 T2	Oil	3294.50	54426T	5.89e5	2.01e6	1.47e6	1.44e6	9.23e5	8.07e5	5.56e5	6.15e5	4.35e5	9.12e5	9.60e5	6.48e5	4.25e5	2.38e6	1.44e6	6.02e5	7.45e5	
1/3-11 T2	Oil	3294.50	54427T	6.20e5	2.12e6	1.50e6	1.49e6	9.79e5	8.92e5	5.84e5	6.81e5	4.45e5	9.60e5	1.03e6	6.69e5	4.43e5	2.40e6	1.47e6	6.08e5	7.76e5	



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 14. continued, GCMS SIR of saturated compounds (peak height)

Well	Sample type	Lower Depth (m)	APT ID	28qBS#1	28qBS#2	28qBR#1	28qBR#2	28taR	27taS	27pBR+29qBS	27pBS	28taS	27taR	29qBR	29taR	28taS	29taS	28pBR	28pBS	28taR
1/3-11	DC	2500	53991	1.79e4	1.68e4	1.14e4	1.48e4	1.06e4	4.90e4	3.02e4	2.17e4	7.65e3	1.30e5	3.86e4	1.43e4	1.17e4	2.11e4	3.53e4	2.17e4	5.19e4
1/3-11	DC	3192	53994	8.95e4	8.86e4	4.77e4	6.40e4	3.64e4	1.75e5	1.55e5	1.19e5	3.57e4	5.15e5	1.17e5	5.97e4	4.98e4	5.65e4	1.20e5	1.25e5	1.18e5
1/3-11	DC	3240	53999	1.11e5	1.08e5	6.50e4	8.18e4	4.84e4	2.49e5	2.04e5	1.54e5	3.39e4	6.86e5	1.50e5	7.19e4	5.92e4	6.31e4	1.47e5	1.54e5	1.58e5
1/3-11 T2	DC	2600	54002	5.37e4	4.87e4	3.08e4	3.73e4	2.49e4	1.48e5	9.79e4	5.84e4	2.27e4	4.91e5	1.25e5	4.66e4	2.53e4	6.81e4	1.14e5	6.22e4	1.80e5
1/3-11 T2	DC	3215	54003	3.98e5	3.90e5	2.24e5	2.97e5	2.01e5	8.25e5	6.46e5	4.72e5	1.52e5	1.86e6	5.23e5	2.83e5	3.11e5	2.48e5	5.89e5	5.48e5	8.74e5
1/3-11 T2	DC	3398	54005	1.25e5	1.22e5	7.65e4	9.42e4	5.90e4	2.72e5	2.32e5	1.68e5	5.28e4	7.04e5	1.80e5	9.33e4	5.83e4	9.43e4	1.63e5	1.84e5	1.51e5
1/3-11 T2	DC	3491	54007	1.41e5	1.35e5	7.61e4	1.02e5	5.85e4	3.68e5	2.52e5	1.90e5	5.33e4	8.91e5	1.80e5	8.10e4	5.40e4	7.76e4	1.61e5	1.83e5	1.41e5
1/3-11	Mud	1309	54009	1.67e4	1.41e4	7.94e3	9.53e3	6.30e3	3.29e4	2.54e4	1.81e4	5.51e3	1.00e5	1.88e4	7.25e3	0.00e0	0.00e0	1.38e4	1.63e4	1.60e4
1/3-11	Mud	3100	54010	1.20e4	9.24e3	6.01e3	8.18e3	4.57e3	2.23e4	1.94e4	1.37e4	4.45e3	7.36e4	1.55e4	7.03e3	0.00e0	5.13e3	1.26e4	1.34e4	1.20e4
1/3-11	Mud	3289	54011	1.30e4	1.32e4	8.40e3	9.15e3	6.14e3	3.09e4	2.26e4	1.86e4	0.00e0	1.05e5	1.69e4	9.64e3	6.22e3	6.62e3	1.46e4	1.67e4	1.78e4
1/3-11 T2	Mud	1268.50	54012	1.32e4	1.15e4	6.79e3	9.87e3	5.05e3	2.94e4	2.17e4	1.60e4	0.00e0	1.02e5	1.56e4	7.07e3	0.00e0	0.00e0	1.39e4	1.34e4	1.26e4
1/3-11 T2	Mud	3200	54013	1.28e4	1.17e4	6.52e3	8.24e3	5.43e3	3.03e4	2.02e4	1.52e4	4.89e3	1.01e5	1.54e4	6.76e3	0.00e0	5.13e3	1.15e4	1.25e4	1.13e4
1/3-11 T2	Mud	3595	54014	1.52e4	1.47e4	5.96e3	9.26e3	5.58e3	3.84e4	2.43e4	1.59e4	0.00e0	1.10e5	1.77e4	6.98e3	0.00e0	0.00e0	1.29e4	1.42e4	1.09e4
1/3-11 T2	COPL	3295.61	54307	1.23e6	1.17e6	6.71e5	8.03e5	5.17e5	1.05e6	1.62e6	1.05e6	3.89e5	1.61e6	1.24e6	6.79e5	3.09e5	5.72e5	8.95e5	1.12e6	7.26e5
1/3-11 T2	COPL	3296.23	54308	8.23e5	8.40e5	4.81e5	5.97e5	3.90e5	7.02e5	1.13e6	7.26e5	2.70e5	1.06e6	8.57e5	4.92e5	2.22e5	4.13e5	6.23e5	7.95e5	4.86e5
1/3-11 T2	COPL	3414.02	54309	2.21e5	2.28e5	1.25e5	1.58e5	1.17e5	2.22e5	8.87e5	1.70e5	8.03e4	3.22e5	5.57e5	2.46e5	1.11e5	3.61e5	2.10e5	2.39e5	1.75e5
1/3-11 T2	Oil	3294.50	54423T	8.12e5	8.30e5	4.68e5	5.56e5	3.58e5	5.60e5	1.05e6	6.06e5	2.81e5	6.97e5	8.01e5	4.68e5	1.95e5	3.86e5	5.27e5	6.67e5	4.02e5
1/3-11 T2	Oil	3294.50	54424T	7.92e5	7.79e5	4.73e5	5.51e5	3.56e5	5.48e5	1.05e6	5.83e5	2.70e5	7.14e5	7.95e5	4.66e5	1.90e5	3.85e5	5.02e5	6.75e5	4.11e5
1/3-11 T2	Oil	3294.50	54425T	7.56e5	7.70e5	4.29e5	5.03e5	3.49e5	5.41e5	9.91e5	5.70e5	2.60e5	6.98e5	7.73e5	4.75e5	1.86e5	3.79e5	5.09e5	6.70e5	4.02e5
1/3-11 T2	Oil	3294.50	54426T	1.02e6	1.02e6	5.87e5	6.91e5	4.66e5	7.09e5	1.36e6	7.47e5	3.44e5	8.99e5	9.69e5	5.71e5	2.35e5	4.92e5	6.50e5	8.69e5	5.20e5
1/3-11 T2	Oil	3294.50	54427T	1.07e6	1.07e6	5.98e5	7.27e5	4.68e5	7.41e5	1.38e6	7.69e5	3.49e5	9.49e5	1.01e6	6.17e5	2.45e5	5.05e5	6.83e5	9.04e5	5.56e5



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 14. continued, GCMS SIR of saturated compounds (peak height)

m/e				217								218							
Well	Sample type	Lower Depth (m)	APT ID	2900S	2900R	2905S	2905R	3000S	3000R	3005S	3005R	2700R	2705S	2800R	2805S	2900R	2905S	3000R	3005S
1/3-11	DC	2500	53991	2.44e4	2.65e4	3.05e4	1.42e5	2.76e4	0.00e0	0.00e0	1.39e4	5.34e4	2.95e4	3.61e4	3.15e4	5.05e4	3.95e4	0.00e0	0.00e0
1/3-11	DC	3192	53994	1.22e5	1.38e5	1.41e5	2.09e5	8.73e4	4.76e4	3.08e4	5.21e4	2.19e5	1.77e5	1.67e5	1.77e5	2.21e5	2.18e5	5.06e4	4.44e4
1/3-11	DC	3240	53999	1.62e5	1.68e5	1.64e5	2.56e5	1.07e5	4.77e4	3.58e4	5.85e4	2.88e5	2.52e5	2.04e5	2.22e5	2.65e5	2.55e5	4.85e4	4.84e4
1/3-11 T2	DC	2600	54002	6.56e4	8.08e4	1.22e5	4.22e5	1.03e5	1.67e4	0.00e0	2.77e4	1.37e5	8.74e4	9.38e4	7.58e4	1.37e5	1.25e5	0.00e0	0.00e0
1/3-11 T2	DC	3215	54003	7.97e5	6.38e5	6.13e5	1.20e6	5.03e5	1.80e5	1.27e5	2.57e5	8.99e5	8.00e5	8.05e5	8.16e5	9.44e5	8.87e5	1.85e5	1.69e5
1/3-11 T2	DC	3398	54005	1.69e5	2.06e5	1.95e5	2.40e5	1.17e5	6.21e4	3.97e4	5.40e4	3.16e5	2.66e5	2.33e5	2.59e5	3.19e5	3.13e5	6.65e4	6.04e4
1/3-11 T2	DC	3491	54007	1.57e5	1.93e5	1.90e5	2.12e5	1.04e5	5.36e4	3.79e4	4.83e4	3.48e5	3.02e5	2.28e5	2.69e5	3.09e5	2.98e5	5.94e4	5.19e4
1/3-11	Mud	1309	54009	1.41e4	1.41e4	1.54e4	1.84e4	9.92e3	4.80e3	0.00e0	5.63e3	3.67e4	3.22e4	1.97e4	2.22e4	2.21e4	2.20e4	5.14e3	4.23e3
1/3-11	Mud	3100	54010	1.06e4	1.25e4	1.19e4	1.58e4	7.18e3	4.07e3	0.00e0	4.61e3	3.04e4	2.32e4	1.42e4	1.59e4	1.61e4	1.56e4	4.35e3	3.30e3
1/3-11	Mud	3289	54011	1.44e4	1.76e4	1.66e4	2.45e4	1.16e4	5.35e3	0.00e0	6.81e3	3.46e4	2.93e4	2.01e4	1.90e4	2.62e4	2.51e4	5.48e3	4.66e3
1/3-11 T2	Mud	1268.50	54012	1.03e4	1.31e4	1.23e4	1.58e4	7.19e3	3.17e3	0.00e0	4.18e3	2.98e4	2.46e4	1.84e4	2.08e4	1.96e4	1.80e4	4.77e3	4.65e3
1/3-11 T2	Mud	3200	54013	1.05e4	1.24e4	1.09e4	1.55e4	7.64e3	0.00e0	0.00e0	3.63e3	2.91e4	2.39e4	1.54e4	1.75e4	1.75e4	1.65e4	4.72e3	3.84e3
1/3-11 T2	Mud	3595	54014	8.52e3	1.32e4	1.14e4	1.38e4	6.62e3	3.61e3	0.00e0	3.79e3	3.09e4	2.67e4	1.83e4	1.83e4	1.63e4	1.76e4	4.65e3	0.00e0
1/3-11 T2	COPL	3295.61	54307	8.32e5	1.06e6	1.02e6	9.21e5	4.94e5	3.26e5	2.51e5	2.19e5	1.93e6	1.70e6	1.31e6	1.51e6	1.66e6	1.67e6	4.02e5	4.03e5
1/3-11 T2	COPL	3296.23	54308	5.80e5	7.48e5	6.99e5	6.58e5	3.33e5	2.40e5	1.79e5	1.59e5	1.30e6	1.16e6	8.96e5	1.05e6	1.14e6	1.12e6	2.93e5	2.85e5
1/3-11 T2	COPL	3414.02	54309	6.06e5	4.85e5	4.46e5	4.98e5	1.69e5	6.37e4	0.00e0	0.00e0	3.73e5	2.63e5	2.94e5	3.33e5	7.60e5	7.18e5	3.96e4	3.01e4
1/3-11 T2	Oil	3294.50	54423T	4.59e5	6.01e5	5.54e5	5.23e5	2.79e5	2.11e5	1.56e5	1.32e5	1.09e6	9.48e5	7.27e5	8.83e5	9.09e5	8.58e5	2.44e5	2.41e5
1/3-11 T2	Oil	3294.50	54424T	4.51e5	6.33e5	5.65e5	5.49e5	2.79e5	2.12e5	1.62e5	1.28e5	1.10e6	9.43e5	7.30e5	8.57e5	9.13e5	9.00e5	2.58e5	2.55e5
1/3-11 T2	Oil	3294.50	54425T	4.72e5	6.06e5	5.60e5	5.40e5	2.81e5	2.13e5	1.55e5	1.36e5	1.09e6	9.16e5	7.37e5	8.57e5	9.34e5	8.78e5	2.57e5	2.34e5
1/3-11 T2	Oil	3294.50	54426T	5.99e5	7.57e5	7.07e5	7.29e5	3.46e5	2.76e5	2.04e5	1.74e5	1.37e6	1.21e6	9.74e5	1.14e6	1.16e6	1.12e6	3.39e5	3.19e5
1/3-11 T2	Oil	3294.50	54427T	6.28e5	8.23e5	7.52e5	7.50e5	3.53e5	2.81e5	2.15e5	1.78e5	1.42e6	1.24e6	9.90e5	1.16e6	1.23e6	1.17e6	3.32e5	3.25e5

Abbreviations of saturated biomarkers

17 α (H), 21 β (H)-25,28,30-trisnorhopane	25nor28 $\alpha\beta$	17 α (H), 21 β (H), 22(R)-trishomohopane	33 $\alpha\beta$ R
17 α , 21 β -25,30-bisnorhopane	25nor29 $\alpha\beta$	17 α (H), 21 β (H), 22(S)-tetrakishomohopane	34 $\alpha\beta$ S
17 α (H), 21 β (H)-25-norhopane	25nor30 $\alpha\beta$	17 α (H), 21 β (H), 22(R)-tetrakishomohopane	34 $\alpha\beta$ R
17 α , 21 β , 22(R/S)-25-norhomohopane	25nor31 $\alpha\beta$	17 α (H), 21 β (H), 22(S)-pentakishomohopane	35 $\alpha\beta$ S
C ₁₉ H ₃₄ tricyclic terpane	19/3	17 α (H), 21 β (H), 22(R)-pentakishomohopane	35 $\alpha\beta$ R
C ₂₀ H ₃₆ tricyclic terpane	20/3	C21-5 α (H), 14 α (H), 17 α (H)-pregnane	21 $\alpha\alpha$
C ₂₁ H ₃₈ tricyclic terpane	21/3	C21-5 α (H), 14 β (H), 17 β (H)-pregnane	21 $\beta\beta$
C ₂₃ H ₄₂ tricyclic terpane	23/3	C22-5 α (H), 14 α (H), 17 α (H)-pregnane	22 $\alpha\alpha$
C ₂₄ H ₄₄ tricyclic terpane	24/3	C22-5 α (H), 14 β (H), 17 β (H)-pregnane	22 $\beta\beta$
C ₂₅ H ₄₆ tricyclic terpane	25/3R	13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	27d β S
C ₂₅ H ₄₆ tricyclic terpane	25/3S	13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	27d β R
C ₂₄ H ₄₂ tetracyclic terpane	24/4	13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	27d α R
C ₂₆ H ₄₈ tricyclic terpane	26/3R	13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	27d α S
C ₂₆ H ₄₈ tricyclic terpane	26/3S	24-methyl-13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	28d β S
C ₂₈ H ₅₂ tricyclic terpane	28/3R	24-methyl-13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	28d β R
C ₂₈ H ₅₂ tricyclic terpane	28/3S	24-methyl-13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	28d α R
C ₂₉ H ₅₄ tricyclic terpane	29/3R	5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	27 $\alpha\alpha$ S
C ₂₉ H ₅₄ tricyclic terpane	29/3S	5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	27 $\beta\beta$ R
18 α (H)-22,29,30-trisnorneohopane	27Ts	24-ethyl-13 β (H), 17 α (H), 20(S)-cholestane (diasterane)	29d β S
17 α (H)-22,29,30-trisnorhopane	27Tm	5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	27 $\beta\beta$ S
C ₃₀ H ₅₆ tricyclic terpane	30/3R	24-methyl-13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	28d α S
C ₃₀ H ₅₆ tricyclic terpane	30/3S	5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	27 $\alpha\alpha$ R
17 α (H), 21 β (H)-28,30-bisnorhopane	28 $\alpha\beta$	24-ethyl-13 β (H), 17 α (H), 20(R)-cholestane (diasterane)	29d β R
17 α (H), 21 β (H)-30-norhopane	29 $\alpha\beta$	24-ethyl-13 α (H), 17 β (H), 20(R)-cholestane (diasterane)	29d α R
18 α (H)-30-norneohopane	29Ts	24-methyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	28 $\alpha\alpha$ S
15 α -methyl-17 α (H)-27-norhopane (diahopane)	30d	24-ethyl-13 α (H), 17 β (H), 20(S)-cholestane (diasterane)	29d α S
17 β (H), 21 α (H)-30-norhopane (normoretane)	29 $\beta\alpha$	24-methyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	28 $\beta\beta$ R
18 α (H)-oleanane	30O	24-methyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	28 $\beta\beta$ S
17 α (H), 21 β (H)-hopane	30 $\alpha\beta$	24-methyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	28 $\alpha\alpha$ R
17 β (H), 21 α (H)-hopane (moretane)	30 $\beta\alpha$	24-ethyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	29 $\alpha\alpha$ S
17 α (H), 21 β (H), 22(S)-homohopane	31 $\alpha\beta$ S	24-ethyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	29 $\beta\beta$ R
17 α (H), 21 β (H), 22(R)-homohopane	31 $\alpha\beta$ R	24-ethyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	29 $\beta\beta$ S
Gammacerane	30G	24-ethyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	29 $\alpha\alpha$ R
17 β (H), 21 α (H)-homohopane	31 $\beta\alpha$	24-propyl-5 α (H), 14 α (H), 17 α (H), 20(S)-cholestane	30 $\alpha\alpha$ S
17 α (H), 21 β (H), 22(S)-bishomohopane	32 $\alpha\beta$ S	24-propyl-5 α (H), 14 β (H), 17 β (H), 20(R)-cholestane	30 $\beta\beta$ R
17 α (H), 21 β (H), 22(R)-bishomohopane	32 $\alpha\beta$ R	24-propyl-5 α (H), 14 β (H), 17 β (H), 20(S)-cholestane	30 $\beta\beta$ S
17 α (H), 21 β (H), 22(S)-trishomohopane	33 $\alpha\beta$ S	24-propyl-5 α (H), 14 α (H), 17 α (H), 20(R)-cholestane	30 $\alpha\alpha$ R



Table 15. GCMS SIR of saturated compounds (amounts in ng/g)

m/e	177							191												
Well	Sample type	Lower Depth (m)	APT ID	25nor28αβ	25nor29αβ	25nor30αβ	25nor31αβ	19/3	20/3	21/3	23/3	24/3	25/3R	25/3S	24/4	26/3R	26/3S	28/3R	28/3S	29/3R
1/3-11	DC	2500	53991	0.00e0	0.00e0	0.00e0	2.46e3	6.51e3	1.85e3	1.25e3	1.10e3	5.41e2	3.35e2	2.61e2	1.53e3	2.54e2	2.03e2	0.00e0	0.00e0	0.00e0
1/3-11	DC	3192	53994	2.33e2	1.97e2	0.00e0	7.34e2	1.97e3	1.23e3	1.04e3	1.01e3	5.08e2	2.57e2	2.40e2	6.01e2	2.25e2	2.09e2	1.99e2	1.97e2	2.28e2
1/3-11	DC	3240	53999	3.31e2	2.50e2	1.59e2	7.41e2	2.49e3	1.59e3	1.28e3	1.35e3	6.33e2	3.44e2	3.09e2	8.08e2	2.72e2	2.58e2	2.00e2	2.02e2	2.38e2
1/3-11 T2	DC	2600	54002	4.10e2	7.63e2	5.65e2	2.24e3	3.76e3	1.34e3	1.01e3	1.07e3	6.54e2	3.23e2	2.47e2	1.73e3	2.36e2	2.04e2	1.91e2	1.31e2	1.85e2
1/3-11 T2	DC	3215	54003	4.97e3	4.34e3	2.61e3	3.99e3	2.71e3	2.02e3	2.49e3	3.12e3	1.67e3	1.04e3	9.23e2	2.34e3	7.97e2	6.69e2	8.07e2	6.97e2	9.28e2
1/3-11 T2	DC	3398	54005	4.01e2	5.16e2	2.07e2	1.11e3	1.93e3	1.24e3	1.28e3	1.45e3	6.11e2	3.44e2	3.37e2	7.83e2	2.97e2	2.69e2	3.10e2	2.85e2	3.63e2
1/3-11 T2	DC	3491	54007	3.86e2	3.31e2	2.06e2	7.97e2	2.26e3	1.37e3	1.63e3	1.99e3	8.51e2	4.01e2	3.88e2	8.90e2	3.81e2	3.35e2	3.45e2	3.17e2	3.85e2
1/3-11	Mud	1309	54009	0.00e0	0.00e0	0.00e0	4.38e2	4.48e3	2.77e3	2.28e3	1.76e3	8.73e2	4.06e2	4.17e2	8.68e2	3.51e2	3.35e2	1.87e2	1.85e2	2.16e2
1/3-11	Mud	3100	54010	0.00e0	0.00e0	0.00e0	3.62e2	4.44e3	2.45e3	1.80e3	1.68e3	7.40e2	3.45e2	3.11e2	9.17e2	2.60e2	2.89e2	1.53e2	1.82e2	2.12e2
1/3-11	Mud	3289	54011	0.00e0	0.00e0	0.00e0	3.98e2	3.66e3	1.89e3	1.39e3	1.26e3	5.92e2	3.52e2	2.77e2	6.64e2	2.50e2	2.18e2	1.92e2	1.32e2	2.05e2
1/3-11 T2	Mud	1268.50	54012	2.42e2	0.00e0	0.00e0	3.15e2	3.85e3	1.77e3	1.49e3	1.28e3	6.23e2	3.67e2	3.56e2	7.74e2	3.11e2	2.51e2	2.02e2	1.80e2	2.29e2
1/3-11 T2	Mud	3200	54013	0.00e0	0.00e0	0.00e0	3.44e2	4.07e3	2.20e3	1.62e3	1.75e3	6.99e2	3.95e2	3.71e2	8.17e2	3.09e2	2.95e2	2.24e2	1.83e2	1.90e2
1/3-11 T2	Mud	3595	54014	0.00e0	0.00e0	0.00e0	3.02e2	3.40e3	2.21e3	2.06e3	2.09e3	8.11e2	3.74e2	4.27e2	8.58e2	3.22e2	3.35e2	2.01e2	2.39e2	1.97e2
1/3-11 T2	COPL	3295.61	54307	2.04e3	2.04e3	1.57e3	3.29e3	2.30e3	2.43e3	3.41e3	4.94e3	2.97e3	1.61e3	1.61e3	3.32e3	1.46e3	1.43e3	1.33e3	1.23e3	1.77e3
1/3-11 T2	COPL	3296.23	54308	2.80e3	2.77e3	2.28e3	4.31e3	2.80e3	3.11e3	4.76e3	6.99e3	4.19e3	2.24e3	2.26e3	4.45e3	2.01e3	1.84e3	1.89e3	1.64e3	2.45e3
1/3-11 T2	COPL	3414.02	54309	3.68e4	1.16e4	8.10e3	1.66e4	5.90e3	5.29e3	7.35e3	7.17e3	3.95e3	1.94e3	1.73e3	6.90e3	1.96e3	1.89e3	1.21e3	1.00e3	1.76e3
1/3-11 T2	Oil	3294.50	54423T	5.21e3	6.41e3	5.07e3	8.93e3	4.92e3	6.06e3	9.78e3	1.23e4	7.98e3	4.24e3	4.12e3	7.48e3	3.79e3	3.51e3	3.31e3	3.22e3	4.25e3
1/3-11 T2	Oil	3294.50	54424T	5.46e3	6.30e3	5.35e3	8.57e3	4.85e3	5.64e3	9.27e3	1.28e4	8.18e3	4.19e3	4.30e3	7.52e3	4.02e3	3.46e3	3.60e3	3.38e3	4.73e3
1/3-11 T2	Oil	3294.50	54425T	5.29e3	6.30e3	5.39e3	9.04e3	4.58e3	5.85e3	9.49e3	1.22e4	8.17e3	4.18e3	4.05e3	7.53e3	3.80e3	3.66e3	3.57e3	3.66e3	5.01e3
1/3-11 T2	Oil	3294.50	54426T	5.71e3	6.87e3	5.96e3	9.38e3	5.06e3	5.75e3	1.01e4	1.36e4	8.55e3	4.13e3	4.42e3	8.07e3	4.22e3	3.82e3	3.68e3	3.63e3	5.03e3
1/3-11 T2	Oil	3294.50	54427T	5.57e3	7.06e3	5.89e3	9.81e3	4.88e3	6.15e3	1.02e4	1.33e4	8.47e3	4.24e3	4.42e3	7.93e3	4.03e3	3.80e3	3.84e3	3.59e3	5.28e3



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 15. continued, GCMS SIR of saturated compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	293S	27Ts	27Tm	303R	303S	28αβ	25nor30αβ	29αβ	29Ts	30α	29βα	30α	30αβ	30βα	31αβS	31αβR	30G
1/3-11	DC	2500	53991	0.00e0	2.49e3	9.78e3	0.00e0	0.00e0	1.82e3	0.00e0	2.05e4	5.85e3	1.20e3	1.05e4	0.00e0	3.94e4	1.08e4	1.56e4	2.93e4	1.11e3
1/3-11	DC	3192	53994	2.61e2	1.37e3	1.25e3	2.81e2	2.80e2	6.59e2	1.78e2	5.54e3	1.87e3	6.86e2	7.97e2	8.56e2	9.32e3	1.23e3	4.89e3	3.98e3	7.93e2
1/3-11	DC	3240	53999	2.36e2	1.54e3	1.68e3	2.15e2	2.45e2	7.35e2	1.67e2	6.14e3	1.89e3	6.35e2	8.35e2	1.34e3	1.00e4	1.35e3	4.53e3	3.62e3	6.83e2
1/3-11 T2	DC	2600	54002	2.35e2	2.96e3	7.53e3	4.56e2	5.10e2	4.92e3	0.00e0	1.84e4	6.07e3	8.56e2	9.15e3	1.55e3	3.22e4	6.94e3	8.65e3	1.75e4	7.91e2
1/3-11 T2	DC	3215	54003	9.57e2	5.96e3	7.42e3	9.19e2	2.81e3	5.66e3	3.39e3	2.66e4	8.77e3	2.73e3	3.63e3	6.12e3	5.05e4	7.20e3	1.88e4	1.49e4	2.36e3
1/3-11 T2	DC	3398	54005	3.68e2	1.88e3	1.98e3	4.15e2	4.72e2	1.15e3	2.66e2	9.07e3	2.64e3	9.80e2	1.04e3	1.07e3	1.44e4	1.86e3	7.88e3	5.95e3	1.27e3
1/3-11 T2	DC	3491	54007	3.63e2	1.81e3	1.79e3	3.43e2	3.18e2	9.40e2	2.01e2	6.70e3	2.11e3	7.19e2	7.88e2	9.17e2	1.06e4	1.32e3	5.14e3	3.97e3	7.83e2
1/3-11	Mud	1309	54009	2.39e2	1.24e3	1.20e3	0.00e0	0.00e0	4.52e2	0.00e0	3.65e3	1.10e3	3.48e2	4.01e2	0.00e0	5.60e3	5.64e2	1.82e3	1.39e3	2.89e2
1/3-11	Mud	3100	54010	0.00e0	1.12e3	1.06e3	0.00e0	0.00e0	4.87e2	0.00e0	2.86e3	9.86e2	2.98e2	3.30e2	0.00e0	4.40e3	4.71e2	1.39e3	1.17e3	2.30e2
1/3-11	Mud	3289	54011	1.96e2	1.05e3	1.12e3	0.00e0	0.00e0	5.62e2	0.00e0	3.52e3	1.05e3	2.92e2	3.67e2	0.00e0	5.58e3	6.35e2	2.00e3	1.48e3	2.62e2
1/3-11 T2	Mud	1268.50	54012	1.64e2	1.14e3	1.15e3	0.00e0	0.00e0	4.89e2	0.00e0	2.94e3	8.30e2	2.60e2	3.05e2	0.00e0	4.48e3	5.05e2	1.47e3	1.12e3	2.64e2
1/3-11 T2	Mud	3200	54013	0.00e0	1.03e3	1.21e3	0.00e0	0.00e0	6.04e2	0.00e0	3.29e3	9.78e2	2.99e2	3.85e2	0.00e0	4.70e3	5.12e2	1.47e3	1.17e3	2.21e2
1/3-11 T2	Mud	3595	54014	1.87e2	1.04e3	9.93e2	0.00e0	0.00e0	4.59e2	0.00e0	2.41e3	8.35e2	2.57e2	2.83e2	0.00e0	3.76e3	3.98e2	1.21e3	8.35e2	1.77e2
1/3-11 T2	COPL	3295.61	54307	1.74e3	9.68e3	9.00e3	1.43e3	1.58e3	4.08e3	2.04e3	2.22e4	9.54e3	4.60e3	2.72e3	4.64e3	4.16e4	5.37e3	1.54e4	1.14e4	1.91e3
1/3-11 T2	COPL	3296.23	54308	2.43e3	1.26e4	1.20e4	1.92e3	2.18e3	5.41e3	2.95e3	3.04e4	1.32e4	6.60e3	3.73e3	6.58e3	5.74e4	7.54e3	2.09e4	1.52e4	2.61e3
1/3-11 T2	COPL	3414.02	54309	1.51e3	1.43e4	2.92e4	1.93e3	5.77e3	1.82e4	1.05e4	9.72e4	2.91e4	1.02e4	1.36e4	1.66e5	2.15e5	3.73e4	5.52e4	3.68e4	5.11e3
1/3-11 T2	Oil	3294.50	54423T	4.56e3	2.73e4	2.29e4	3.78e3	3.99e3	1.02e4	7.14e3	5.47e4	2.70e4	1.50e4	7.56e3	1.69e4	1.13e5	1.61e4	3.92e4	2.80e4	5.04e3
1/3-11 T2	Oil	3294.50	54424T	4.60e3	2.78e4	2.16e4	3.90e3	4.01e3	1.05e4	6.80e3	5.23e4	2.69e4	1.58e4	7.81e3	1.68e4	1.09e5	1.52e4	4.01e4	2.88e4	4.90e3
1/3-11 T2	Oil	3294.50	54425T	4.78e3	2.80e4	2.21e4	4.08e3	4.30e3	1.10e4	7.56e3	5.42e4	2.78e4	1.56e4	7.78e3	1.75e4	1.16e5	1.63e4	4.29e4	2.98e4	5.25e3
1/3-11 T2	Oil	3294.50	54426T	5.04e3	2.94e4	2.42e4	4.32e3	4.39e3	1.16e4	7.74e3	5.74e4	2.96e4	1.73e4	8.53e3	1.82e4	1.21e5	1.69e4	4.37e4	3.18e4	5.26e3
1/3-11 T2	Oil	3294.50	54427T	5.53e3	3.12e4	2.53e4	4.42e3	4.65e3	1.19e4	7.57e3	5.87e4	3.00e4	1.72e4	8.46e3	1.91e4	1.23e5	1.84e4	4.56e4	3.19e4	5.47e3



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 15. continued, GCMS SIR of saturated compounds (amounts in ng/g)

				191									217							
Well	Sample type	Lower Depth (m)	APT ID	31βo	32αβS	32αβR	33αβS	33αβR	34αβS	34αβR	35αβS	35αβR	21αα	21ββ	22αα	22ββ	27αβS	27αβR	27ααR	27ααS
1/3-11	DC	2500	53991	7.33e3	3.53e3	7.91e3	1.94e3	2.97e3	1.39e3	1.71e3	9.29e2	1.17e3	8.41e2	9.07e2	3.48e2	4.97e2	9.61e2	7.35e2	2.84e2	3.24e2
1/3-11	DC	3192	53994	9.24e2	3.35e3	2.41e3	2.80e3	2.04e3	1.72e3	1.21e3	1.46e3	1.01e3	6.83e2	5.78e2	2.56e2	2.66e2	8.07e2	5.09e2	2.00e2	2.66e2
1/3-11	DC	3240	53999	7.76e2	3.00e3	2.13e3	2.31e3	1.63e3	1.31e3	9.15e2	9.92e2	7.13e2	9.01e2	6.97e2	3.66e2	3.56e2	1.04e3	6.15e2	2.53e2	3.29e2
1/3-11 T2	DC	2600	54002	4.21e3	2.18e3	4.16e3	1.04e3	1.45e3	6.13e2	9.03e2	4.85e2	5.16e2	9.15e2	9.32e2	3.60e2	4.68e2	1.14e3	7.50e2	3.07e2	3.17e2
1/3-11 T2	DC	3215	54003	4.09e3	1.22e4	8.82e3	9.88e3	6.91e3	6.40e3	4.44e3	5.98e3	4.31e3	2.15e3	1.92e3	1.15e3	1.03e3	3.48e3	2.17e3	9.39e2	1.24e3
1/3-11 T2	DC	3398	54005	1.44e3	5.55e3	3.79e3	4.40e3	2.97e3	2.68e3	1.95e3	2.24e3	1.52e3	7.15e2	5.24e2	2.75e2	2.74e2	1.24e3	7.12e2	2.92e2	4.30e2
1/3-11 T2	DC	3491	54007	9.01e2	3.57e3	2.55e3	2.73e3	1.87e3	1.57e3	1.12e3	1.34e3	8.77e2	8.80e2	7.05e2	3.45e2	3.63e2	1.38e3	8.16e2	3.22e2	4.55e2
1/3-11	Mud	1309	54009	2.93e2	1.02e3	7.90e2	8.09e2	5.31e2	3.91e2	2.77e2	2.30e2	2.10e2	1.22e3	8.51e2	4.39e2	4.69e2	8.77e2	5.14e2	2.17e2	2.64e2
1/3-11	Mud	3100	54010	2.41e2	7.81e2	5.34e2	6.02e2	3.72e2	2.94e2	2.21e2	2.42e2	2.10e2	1.15e3	8.40e2	4.47e2	3.72e2	7.75e2	3.89e2	1.72e2	1.97e2
1/3-11	Mud	3289	54011	3.50e2	1.27e3	1.08e3	1.05e3	6.92e2	5.47e2	4.33e2	4.50e2	3.03e2	9.07e2	6.46e2	3.11e2	3.04e2	7.14e2	4.17e2	1.71e2	2.13e2
1/3-11 T2	Mud	1268.50	54012	2.98e2	8.53e2	6.30e2	6.72e2	4.39e2	3.67e2	2.21e2	2.84e2	0.00e0	7.91e2	7.03e2	3.62e2	3.24e2	8.52e2	4.11e2	1.97e2	2.70e2
1/3-11 T2	Mud	3200	54013	2.25e2	8.72e2	5.32e2	5.56e2	3.98e2	3.36e2	2.81e2	2.42e2	2.06e2	9.87e2	8.20e2	3.77e2	3.83e2	8.06e2	4.54e2	1.89e2	2.31e2
1/3-11 T2	Mud	3595	54014	1.84e2	6.08e2	4.56e2	4.33e2	3.48e2	2.27e2	1.76e2	0.00e0	0.00e0	9.89e2	6.60e2	3.35e2	3.38e2	9.27e2	5.03e2	1.71e2	2.51e2
1/3-11 T2	COPL	3295.61	54307	2.43e3	9.61e3	6.70e3	6.41e3	4.39e3	3.73e3	2.41e3	2.94e3	1.93e3	3.75e3	3.88e3	2.57e3	1.93e3	1.02e4	6.20e3	2.49e3	3.27e3
1/3-11 T2	COPL	3296.23	54308	3.47e3	1.37e4	9.59e3	9.15e3	5.88e3	5.42e3	3.63e3	4.28e3	2.98e3	5.33e3	5.59e3	3.78e3	2.74e3	1.35e4	8.36e3	3.27e3	4.33e3
1/3-11 T2	COPL	3414.02	54309	1.33e4	2.90e4	2.00e4	1.51e4	9.86e3	1.10e4	7.17e3	6.21e3	3.98e3	3.34e3	3.54e3	1.60e3	1.45e3	8.08e3	4.90e3	2.36e3	2.70e3
1/3-11 T2	Oil	3294.50	54423T	7.09e3	2.45e4	1.79e4	1.66e4	1.07e4	9.53e3	6.21e3	6.99e3	4.73e3	1.21e4	1.29e4	8.46e3	5.56e3	2.99e4	1.74e4	7.63e3	9.78e3
1/3-11 T2	Oil	3294.50	54424T	6.92e3	2.46e4	1.75e4	1.67e4	1.09e4	9.79e3	6.62e3	7.53e3	4.92e3	1.20e4	1.25e4	8.55e3	5.66e3	2.96e4	1.86e4	7.33e3	9.69e3
1/3-11 T2	Oil	3294.50	54425T	7.75e3	2.67e4	1.92e4	1.81e4	1.20e4	1.08e4	7.45e3	8.63e3	5.53e3	1.17e4	1.28e4	8.43e3	5.49e3	3.13e4	1.85e4	7.63e3	9.81e3
1/3-11 T2	Oil	3294.50	54426T	8.13e3	2.77e4	2.03e4	1.98e4	1.27e4	1.11e4	7.68e3	8.49e3	6.01e3	1.26e4	1.32e4	8.94e3	5.86e3	3.29e4	1.98e4	8.30e3	1.03e4
1/3-11 T2	Oil	3294.50	54427T	8.44e3	2.89e4	2.04e4	2.03e4	1.33e4	1.21e4	7.94e3	9.27e3	6.05e3	1.31e4	1.41e4	9.10e3	6.02e3	3.26e4	2.00e4	8.27e3	1.06e4



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 15. continued, GCMS SIR of saturated compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	28qBS#1	28qBS#2	28qBR#1	28qBR#2	28taR	27taS	27pBR-29qBS	27pBS	28taS	27taR	29qBR	29taR	28taS	29taS	28pBR	28pBS	28taR
1/3-11	DC	2500	53991	4.23e2	3.98e2	2.70e2	3.49e2	2.51e2	1.16e3	7.14e2	5.13e2	1.81e2	3.08e3	9.14e2	3.38e2	2.78e2	5.00e2	8.35e2	5.14e2	1.23e3
1/3-11	DC	3192	53994	3.64e2	3.60e2	1.94e2	2.60e2	1.48e2	7.13e2	6.29e2	4.82e2	1.45e2	2.10e3	4.74e2	2.43e2	2.03e2	2.30e2	4.89e2	5.10e2	4.80e2
1/3-11	DC	3240	53999	4.11e2	4.00e2	2.42e2	3.04e2	1.80e2	9.24e2	7.59e2	5.73e2	1.26e2	2.55e3	5.57e2	2.67e2	2.20e2	2.34e2	5.46e2	5.71e2	5.86e2
1/3-11 T2	DC	2600	54002	4.41e2	4.00e2	2.53e2	3.06e2	2.04e2	1.21e3	8.04e2	4.79e2	1.86e2	4.03e3	1.02e3	3.83e2	2.08e2	5.59e2	9.38e2	5.10e2	1.48e3
1/3-11 T2	DC	3215	54003	1.65e3	1.61e3	9.28e2	1.23e3	8.30e2	3.41e3	2.67e3	1.95e3	6.29e2	7.72e3	2.16e3	1.17e3	1.29e3	1.03e3	2.44e3	2.27e3	3.62e3
1/3-11 T2	DC	3398	54005	5.32e2	5.22e2	3.27e2	4.03e2	2.52e2	1.16e3	9.91e2	7.18e2	2.26e2	3.01e3	7.70e2	3.98e2	2.49e2	4.03e2	6.98e2	7.86e2	6.47e2
1/3-11 T2	DC	3491	54007	6.07e2	5.79e2	3.28e2	4.40e2	2.52e2	1.58e3	1.08e3	8.15e2	2.29e2	3.83e3	7.75e2	3.49e2	2.32e2	3.34e2	6.92e2	7.88e2	6.05e2
1/3-11	Mud	1309	54009	3.82e2	3.21e2	1.82e2	2.18e2	1.44e2	7.52e2	5.80e2	4.14e2	1.26e2	2.29e3	4.29e2	1.66e2	0.00e0	0.00e0	3.16e2	3.72e2	3.67e2
1/3-11	Mud	3100	54010	2.93e2	2.25e2	1.46e2	1.99e2	1.11e2	5.42e2	4.71e2	3.35e2	1.08e2	1.79e3	3.77e2	1.71e2	0.00e0	1.25e2	3.07e2	3.27e2	2.91e2
1/3-11	Mud	3289	54011	2.63e2	2.66e2	1.69e2	1.84e2	1.24e2	6.23e2	4.57e2	3.75e2	0.00e0	2.12e3	3.41e2	1.94e2	1.25e2	1.33e2	2.94e2	3.37e2	3.58e2
1/3-11 T2	Mud	1268.50	54012	3.10e2	2.70e2	1.59e2	2.32e2	1.19e2	6.89e2	5.10e2	3.77e2	0.00e0	2.40e3	3.67e2	1.66e2	0.00e0	0.00e0	3.27e2	3.14e2	2.97e2
1/3-11 T2	Mud	3200	54013	3.07e2	2.80e2	1.56e2	1.98e2	1.30e2	7.27e2	4.85e2	3.66e2	1.17e2	2.43e3	3.69e2	1.62e2	0.00e0	1.23e2	2.75e2	3.01e2	2.71e2
1/3-11 T2	Mud	3595	54014	3.70e2	3.58e2	1.45e2	2.25e2	1.36e2	9.33e2	5.91e2	3.87e2	0.00e0	2.68e3	4.31e2	1.70e2	0.00e0	0.00e0	3.14e2	3.45e2	2.65e2
1/3-11 T2	COPL	3295.61	54307	4.46e3	4.24e3	2.44e3	2.92e3	1.88e3	3.83e3	5.91e3	3.82e3	1.41e3	5.87e3	4.50e3	2.47e3	1.12e3	2.08e3	3.26e3	4.07e3	2.64e3
1/3-11 T2	COPL	3296.23	54308	5.79e3	5.91e3	3.39e3	4.20e3	2.75e3	4.95e3	7.96e3	5.11e3	1.90e3	7.46e3	6.04e3	3.47e3	1.56e3	2.91e3	4.38e3	5.60e3	3.42e3
1/3-11 T2	COPL	3414.02	54309	4.70e3	4.84e3	2.65e3	3.36e3	2.49e3	4.72e3	1.89e4	3.62e3	1.71e3	6.85e3	1.18e4	5.22e3	2.36e3	7.67e3	4.46e3	5.08e3	3.73e3
1/3-11 T2	Oil	3294.50	54423T	1.30e4	1.33e4	7.48e3	8.89e3	5.73e3	8.95e3	1.68e4	9.69e3	4.49e3	1.11e4	1.28e4	7.49e3	3.11e3	6.18e3	8.43e3	1.07e4	6.43e3
1/3-11 T2	Oil	3294.50	54424T	1.26e4	1.24e4	7.54e3	8.77e3	5.67e3	8.73e3	1.67e4	9.28e3	4.31e3	1.14e4	1.27e4	7.42e3	3.03e3	6.13e3	7.99e3	1.07e4	6.55e3
1/3-11 T2	Oil	3294.50	54425T	1.28e4	1.31e4	7.28e3	8.53e3	5.92e3	9.18e3	1.68e4	9.67e3	4.42e3	1.18e4	1.31e4	8.05e3	3.16e3	6.42e3	8.63e3	1.14e4	6.82e3
1/3-11 T2	Oil	3294.50	54426T	1.40e4	1.41e4	8.09e3	9.53e3	6.43e3	9.78e3	1.87e4	1.03e4	4.75e3	1.24e4	1.34e4	7.88e3	3.25e3	6.78e3	8.97e3	1.20e4	7.18e3
1/3-11 T2	Oil	3294.50	54427T	1.46e4	1.45e4	8.14e3	9.89e3	6.37e3	1.01e4	1.88e4	1.05e4	4.75e3	1.29e4	1.38e4	8.39e3	3.33e3	6.87e3	9.30e3	1.23e4	7.57e3



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 15. continued, GCMS SIR of saturated compounds (amounts in ng/g)

m/e				217								218							
Well	Sample type	Lower Depth (m)	APT ID	29 α aS	29 β BR	29 β BS	29 α aR	30 α aS	30 β BR	30 β BS	30 α aR	27 β BR	27 β BS	28 β BR	28 β BS	29 β BR	29 β BS	30 β BR	30 β BS
1/3-11	DC	2500	53991	5.77e2	6.27e2	7.23e2	3.36e3	6.54e2	0.00e0	0.00e0	3.28e2	1.27e3	6.97e2	8.54e2	7.45e2	1.20e3	9.35e2	0.00e0	0.00e0
1/3-11	DC	3192	53994	4.98e2	5.63e2	5.72e2	8.52e2	3.55e2	1.94e2	1.25e2	2.12e2	8.92e2	7.19e2	6.80e2	7.19e2	8.99e2	8.85e2	2.06e2	1.81e2
1/3-11	DC	3240	53999	6.00e2	6.25e2	6.08e2	9.49e2	3.97e2	1.77e2	1.33e2	2.17e2	1.07e3	9.37e2	7.56e2	8.25e2	9.85e2	9.49e2	1.80e2	1.80e2
1/3-11 T2	DC	2600	54002	5.39e2	6.64e2	9.99e2	3.47e3	8.47e2	1.37e2	0.00e0	2.27e2	1.12e3	7.18e2	7.70e2	6.23e2	1.12e3	1.02e3	0.00e0	0.00e0
1/3-11 T2	DC	3215	54003	3.30e3	2.64e3	2.54e3	4.96e3	2.08e3	7.43e2	5.26e2	1.06e3	3.72e3	3.31e3	3.33e3	3.38e3	3.91e3	3.67e3	7.65e2	7.00e2
1/3-11 T2	DC	3398	54005	7.23e2	8.80e2	8.32e2	1.03e3	5.01e2	2.65e2	1.70e2	2.31e2	1.35e3	1.14e3	9.93e2	1.11e3	1.37e3	1.34e3	2.84e2	2.58e2
1/3-11 T2	DC	3491	54007	6.75e2	8.32e2	8.18e2	9.14e2	4.49e2	2.31e2	1.63e2	2.08e2	1.50e3	1.30e3	9.80e2	1.16e3	1.33e3	1.28e3	2.56e2	2.23e2
1/3-11	Mud	1309	54009	3.22e2	3.23e2	3.53e2	4.20e2	2.27e2	1.10e2	0.00e0	1.29e2	8.40e2	7.37e2	4.51e2	5.09e2	5.05e2	5.02e2	1.17e2	9.70e1
1/3-11	Mud	3100	54010	2.57e2	3.04e2	2.90e2	3.86e2	1.75e2	9.90e1	0.00e0	1.12e2	7.40e2	5.65e2	3.45e2	3.87e2	3.91e2	3.79e2	1.06e2	8.00e1
1/3-11	Mud	3289	54011	2.90e2	3.56e2	3.34e2	4.93e2	2.33e2	1.08e2	0.00e0	1.37e2	6.97e2	5.90e2	4.05e2	3.83e2	5.29e2	5.06e2	1.10e2	9.40e1
1/3-11 T2	Mud	1268.50	54012	2.43e2	3.08e2	2.89e2	3.71e2	1.69e2	7.40e1	0.00e0	9.80e1	6.99e2	5.78e2	4.32e2	4.89e2	4.61e2	4.22e2	1.12e2	1.09e2
1/3-11 T2	Mud	3200	54013	2.53e2	2.97e2	2.62e2	3.72e2	1.83e2	0.00e0	0.00e0	8.70e1	6.98e2	5.75e2	3.69e2	4.20e2	4.19e2	3.96e2	1.13e2	9.20e1
1/3-11 T2	Mud	3595	54014	2.07e2	3.21e2	2.77e2	3.35e2	1.61e2	8.80e1	0.00e0	9.20e1	7.52e2	6.48e2	4.45e2	4.46e2	3.96e2	4.28e2	1.13e2	0.00e0
1/3-11 T2	COPL	3295.61	54307	3.03e3	3.85e3	3.70e3	3.35e3	1.80e3	1.18e3	9.12e2	7.95e2	7.01e3	6.17e3	4.75e3	5.51e3	6.04e3	6.06e3	1.46e3	1.47e3
1/3-11 T2	COPL	3296.23	54308	4.08e3	5.27e3	4.92e3	4.63e3	2.35e3	1.69e3	1.26e3	1.12e3	9.17e3	8.20e3	6.30e3	7.42e3	8.02e3	7.89e3	2.06e3	2.01e3
1/3-11 T2	COPL	3414.02	54309	1.29e4	1.03e4	9.47e3	1.06e4	3.59e3	1.36e3	0.00e0	0.00e0	7.92e3	5.60e3	6.25e3	7.07e3	1.62e4	1.53e4	8.42e2	6.40e2
1/3-11 T2	Oil	3294.50	54423T	7.33e3	9.61e3	8.85e3	8.37e3	4.45e3	3.37e3	2.49e3	2.11e3	1.74e4	1.52e4	1.16e4	1.41e4	1.45e4	1.37e4	3.90e3	3.85e3
1/3-11 T2	Oil	3294.50	54424T	7.19e3	1.01e4	9.00e3	8.75e3	4.44e3	3.37e3	2.59e3	2.04e3	1.76e4	1.50e4	1.16e4	1.36e4	1.45e4	1.43e4	4.10e3	4.06e3
1/3-11 T2	Oil	3294.50	54425T	8.01e3	1.03e4	9.51e3	9.17e3	4.76e3	3.61e3	2.63e3	2.31e3	1.85e4	1.55e4	1.25e4	1.45e4	1.58e4	1.49e4	4.36e3	3.97e3
1/3-11 T2	Oil	3294.50	54426T	8.26e3	1.04e4	9.75e3	1.01e4	4.77e3	3.80e3	2.81e3	2.40e3	1.88e4	1.67e4	1.34e4	1.57e4	1.60e4	1.54e4	4.67e3	4.40e3
1/3-11 T2	Oil	3294.50	54427T	8.54e3	1.12e4	1.02e4	1.02e4	4.80e3	3.82e3	2.92e3	2.42e3	1.94e4	1.69e4	1.35e4	1.58e4	1.68e4	1.59e4	4.52e3	4.43e3



Table 16. GCMS SIR of aromatic compounds (peak height)

Well	Sample type	Lower Depth (m)	APT ID	142				156				170								
				2-MN	1-MN	2-EN	1-EN	2,6-DMN	2,7-DMN	1,3-+1,7-DMN	1,6-DMN	2,3-+1,4-DMN	1,5-DMN	1,2-DMN	1,8-DMN	1,3,7-TMN	1,3,6-TMN	1,3,5-+1,4,6-TMN	2,3,6-TMN	1,2,7-TMN
1/3-11	DC	2500	53991	6.50e6	5.14e6	5.49e5	3.82e5	1.33e6	1.62e6	3.49e6	2.82e6	1.27e6	8.71e5	8.87e5	8.12e4	9.00e5	1.40e6	1.36e6	8.05e5	1.34e6
1/3-11	DC	3192	53994	1.43e7	1.05e7	1.46e6	8.71e5	5.67e6	6.39e6	1.42e7	9.24e6	4.66e6	2.89e6	2.54e6	2.30e5	6.03e6	8.00e6	6.42e6	4.97e6	2.12e6
1/3-11	DC	3240	53999	1.24e7	9.70e6	1.17e6	7.69e5	4.18e6	4.71e6	1.13e7	7.35e6	4.00e6	2.56e6	2.05e6	1.39e5	4.60e6	5.66e6	5.18e6	4.23e6	1.75e6
1/3-11 T2	DC	2600	54002	1.62e7	1.24e7	1.79e6	1.20e6	4.86e6	5.66e6	1.29e7	1.04e7	4.69e6	3.02e6	3.11e6	2.88e5	3.41e6	5.25e6	4.70e6	2.94e6	4.21e6
1/3-11 T2	DC	3215	54003	1.58e7	1.25e7	1.91e6	1.30e6	5.99e6	7.24e6	1.54e7	1.18e7	6.19e6	3.68e6	3.10e6	1.11e5	7.48e6	1.03e7	8.61e6	7.45e6	3.43e6
1/3-11 T2	DC	3398	54005	3.73e7	2.54e7	3.04e6	2.17e6	6.25e6	7.97e6	1.79e7	1.73e7	7.45e6	3.68e6	5.04e6	1.87e5	4.71e6	6.97e6	5.75e6	4.49e6	4.13e6
1/3-11 T2	DC	3491	54007	3.97e6	3.17e6	4.91e5	3.14e5	1.79e6	2.14e6	4.88e6	3.12e6	1.83e6	1.12e6	9.52e5	1.16e5	2.48e6	2.94e6	2.68e6	2.16e6	9.74e5
1/3-11	Mud	1309	54009	4.94e6	3.55e6	2.77e5	2.12e5	9.43e5	1.17e6	2.12e6	1.60e6	7.06e5	5.54e5	3.99e5	2.84e4	6.48e5	8.71e5	7.48e5	5.27e5	2.04e5
1/3-11	Mud	3100	54010	4.37e6	2.88e6	2.33e5	1.84e5	7.82e5	9.99e5	1.82e6	1.37e6	5.86e5	4.82e5	3.60e5	3.84e4	5.73e5	7.31e5	6.27e5	4.41e5	2.11e5
1/3-11	Mud	3289	54011	4.61e6	3.03e6	2.57e5	2.02e5	8.90e5	1.11e6	2.00e6	1.47e6	6.57e5	5.28e5	3.93e5	3.85e4	6.09e5	8.08e5	6.71e5	4.94e5	2.24e5
1/3-11 T2	Mud	1268.50	54012	4.05e6	2.56e6	2.06e5	1.56e5	6.99e5	9.32e5	1.63e6	1.26e6	5.43e5	4.31e5	3.30e5	3.68e4	5.15e5	6.81e5	5.66e5	4.13e5	1.84e5
1/3-11 T2	Mud	3200	54013	3.37e6	2.20e6	1.85e5	1.52e5	6.61e5	8.26e5	1.42e6	1.10e6	4.66e5	3.92e5	2.91e5	2.98e4	4.37e5	5.82e5	4.75e5	3.54e5	1.74e5
1/3-11 T2	Mud	3595	54014	2.49e6	1.58e6	1.37e5	1.16e5	4.35e5	6.37e5	1.02e6	8.21e5	3.42e5	3.05e5	2.14e5	3.03e4	3.16e5	4.34e5	3.50e5	2.64e5	1.36e5
1/3-11 T2	COPL	3295.61	54307	1.93e8	1.29e8	1.49e7	9.60e6	2.93e7	3.75e7	7.60e7	6.99e7	2.64e7	1.43e7	1.45e7	2.32e5	1.77e7	2.56e7	2.07e7	1.50e7	8.85e6
1/3-11 T2	COPL	3296.23	54308	1.37e8	9.35e7	1.13e7	7.34e6	2.28e7	3.00e7	6.04e7	5.58e7	2.17e7	1.18e7	1.21e7	1.74e5	1.57e7	2.32e7	1.86e7	1.41e7	8.08e6
1/3-11 T2	COPL	3414.02	54309	7.97e7	5.06e7	5.61e6	4.04e6	9.06e6	1.28e7	2.58e7	3.08e7	1.11e7	5.54e6	7.94e6	8.15e4	4.95e6	8.28e6	6.64e6	5.72e6	7.76e6
1/3-11 T2	Oil	3294.50	54423T	3.89e8	2.55e8	2.73e7	1.70e7	5.57e7	6.88e7	1.44e8	1.30e8	5.10e7	2.62e7	2.73e7	3.21e5	3.55e7	5.09e7	4.14e7	3.01e7	1.72e7
1/3-11 T2	Oil	3294.50	54424T	3.48e8	2.24e8	2.37e7	1.44e7	4.82e7	5.85e7	1.21e8	1.09e8	4.26e7	2.21e7	2.32e7	2.79e5	2.86e7	4.27e7	3.37e7	2.50e7	1.41e7
1/3-11 T2	Oil	3294.50	54425T	4.16e8	2.68e8	2.94e7	1.85e7	5.84e7	7.39e7	1.54e8	1.40e8	5.38e7	2.81e7	2.99e7	3.49e5	3.72e7	5.56e7	4.46e7	3.33e7	1.85e7
1/3-11 T2	Oil	3294.50	54426T	4.19e8	2.75e8	3.01e7	1.84e7	5.89e7	7.46e7	1.51e8	1.41e8	5.40e7	2.79e7	2.97e7	3.45e5	3.77e7	5.49e7	4.52e7	3.38e7	1.90e7
1/3-11 T2	Oil	3294.50	54427T	4.17e8	2.74e8	3.12e7	1.89e7	6.04e7	7.78e7	1.64e8	1.45e8	5.64e7	2.94e7	3.09e7	3.72e5	4.03e7	5.80e7	4.69e7	3.55e7	1.98e7



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 16. continued, GCMS SIR of aromatic compounds (peak height)

m/e		170					178			192			206							
Well	Sample type	Lower Depth (m)	APT ID	1,6,7 + 1,2,6-TMN	1,2,4-TMN	1,2,5-TMN	P	3-MP	2-MP	9-MP	1-MP	2-EP-9-EP+ 3,6-DMP	1-EP	2,6- + 2,7- + 3,5-DMP	1,3- + 2,10- + 3,9- + 3,10-DMP	1,6- + 2,5- + 2,9-DMP	1,7-DMP	2,3-DMP	1,9- + 4,9- + 4,10-DMP	1,8-DMP
1/3-11	DC	2500	53991	9.68e5	2.98e5	2.29e6	2.08e6	8.02e5	9.05e5	9.00e5	8.84e5	1.69e5	3.13e5	1.62e5	6.26e5	3.58e5	5.13e5	2.41e5	1.50e5	9.52e4
1/3-11	DC	3192	53994	4.55e6	1.40e6	2.62e6	9.39e6	5.11e6	5.77e6	5.80e6	4.38e6	1.35e6	2.53e6	1.41e6	5.26e6	2.56e6	2.05e6	1.82e6	1.25e6	5.80e5
1/3-11	DC	3240	53999	4.04e6	1.04e6	2.73e6	1.55e7	6.18e6	7.18e6	8.66e6	7.74e6	1.61e6	3.27e6	1.67e6	6.68e6	3.63e6	3.01e6	2.56e6	1.92e6	8.91e5
1/3-11 T2	DC	2600	54002	3.41e6	1.23e6	6.83e6	5.78e6	1.91e6	2.26e6	2.36e6	2.19e6	4.14e5	6.72e5	3.76e5	1.35e6	7.63e5	1.06e6	5.11e5	3.55e5	2.45e5
1/3-11 T2	DC	3215	54003	6.92e6	1.68e6	4.69e6	4.03e7	1.73e7	2.11e7	3.33e7	2.45e7	4.24e6	7.71e6	4.32e6	2.54e7	1.27e7	1.10e7	5.87e6	8.06e6	3.87e6
1/3-11 T2	DC	3398	54005	5.57e6	1.41e6	7.98e6	3.06e7	8.18e6	1.01e7	1.12e7	8.91e6	1.54e6	2.58e6	1.39e6	5.86e6	3.18e6	3.61e6	2.13e6	1.74e6	8.76e5
1/3-11 T2	DC	3491	54007	2.07e6	6.28e5	1.28e6	5.32e6	3.13e6	3.24e6	2.96e6	2.56e6	7.91e5	1.54e6	8.47e5	2.74e6	1.42e6	1.06e6	1.17e6	6.46e5	2.83e5
1/3-11	Mud	1309	54009	5.50e5	1.43e5	2.72e5	6.61e5	3.90e5	4.25e5	4.28e5	3.54e5	1.29e5	2.06e5	1.20e5	4.37e5	2.46e5	1.77e5	1.58e5	9.41e4	3.37e4
1/3-11	Mud	3100	54010	4.88e5	1.31e5	2.53e5	6.08e5	3.61e5	4.07e5	3.78e5	3.23e5	1.15e5	1.76e5	1.03e5	3.67e5	2.15e5	1.43e5	1.31e5	8.07e4	2.74e4
1/3-11	Mud	3289	54011	5.22e5	1.52e5	2.77e5	6.34e5	4.12e5	4.33e5	3.88e5	3.46e5	1.24e5	1.85e5	1.10e5	3.88e5	2.21e5	1.54e5	1.46e5	8.17e4	3.02e4
1/3-11 T2	Mud	1268.50	54012	4.36e5	1.26e5	2.23e5	5.49e5	3.54e5	3.87e5	3.33e5	2.97e5	1.05e5	1.62e5	9.57e4	3.09e5	1.88e5	1.34e5	1.24e5	6.72e4	2.43e4
1/3-11 T2	Mud	3200	54013	3.86e5	1.08e5	2.16e5	4.65e5	2.67e5	2.90e5	2.56e5	2.23e5	8.39e4	1.19e5	7.33e4	2.47e5	1.49e5	9.49e4	9.66e4	5.77e4	2.01e4
1/3-11 T2	Mud	3595	54014	2.94e5	8.14e4	1.71e5	3.70e5	2.00e5	2.18e5	1.96e5	1.66e5	5.87e4	8.23e4	4.82e4	1.74e5	1.05e5	7.51e4	6.39e4	3.68e4	1.44e4
1/3-11 T2	COPL	3295.61	54307	1.65e7	2.90e6	1.37e7	4.11e7	1.65e7	1.85e7	2.85e7	2.12e7	3.36e6	5.31e6	2.84e6	2.22e7	1.11e7	9.11e6	4.03e6	7.03e6	2.98e6
1/3-11 T2	COPL	3296.23	54308	1.51e7	2.65e6	1.25e7	4.02e7	1.55e7	1.76e7	2.69e7	1.96e7	3.05e6	4.55e6	2.65e6	2.11e7	1.06e7	8.39e6	3.58e6	6.79e6	2.87e6
1/3-11 T2	COPL	3414.02	54309	9.58e6	1.52e6	1.60e7	6.31e7	1.57e7	1.98e7	2.37e7	2.02e7	2.34e6	3.29e6	1.59e6	1.06e7	5.69e6	7.24e6	2.59e6	3.40e6	1.60e6
1/3-11 T2	Oil	3294.50	54423T	3.23e7	5.38e6	2.72e7	8.08e7	2.86e7	3.31e7	5.22e7	3.87e7	5.34e6	8.26e6	4.59e6	3.77e7	1.74e7	1.55e7	5.96e6	1.22e7	4.90e6
1/3-11 T2	Oil	3294.50	54424T	2.66e7	4.49e6	2.33e7	6.50e7	2.43e7	2.63e7	4.26e7	3.12e7	4.44e6	6.94e6	3.81e6	3.16e7	1.51e7	1.27e7	5.03e6	1.01e7	4.18e6
1/3-11 T2	Oil	3294.50	54425T	3.41e7	5.91e6	3.01e7	9.03e7	3.18e7	3.75e7	5.61e7	4.14e7	5.86e6	8.71e6	4.95e6	4.05e7	1.97e7	1.69e7	6.58e6	1.32e7	5.33e6
1/3-11 T2	Oil	3294.50	54426T	3.57e7	6.12e6	3.02e7	9.46e7	3.42e7	3.78e7	5.88e7	4.36e7	6.08e6	9.36e6	5.21e6	4.30e7	2.03e7	1.75e7	7.05e6	1.39e7	5.67e6
1/3-11 T2	Oil	3294.50	54427T	3.72e7	6.26e6	3.14e7	9.56e7	3.34e7	3.75e7	5.91e7	4.43e7	6.14e6	9.86e6	5.25e6	4.37e7	2.05e7	1.78e7	7.23e6	1.42e7	6.05e6



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 16. continued, GCMS SIR of aromatic compounds (peak height)

			m/e																	
			206	219	184	198	253													
Well	Sample type	Lower Depth (m)	APT ID	1,2-DMP	Retene	DBT	4-MDBT	(3+2)-MDBT	1-MDBT	C21MA	C22MA	βSC27MA	βSC27DMA	βRC27MA+ βRC27DMA	αSC27MA	βSC28MA+ βSC28DMA+ αRC27DMA	αSC27DMA	αRC27MA	αSC28MA	βRC28MA+ βRC28DMA
1/3-11	DC	2500	53991	8.55e4	1.16e6	1.35e5	1.09e5	3.72e4	5.37e4	4.04e4	3.43e4	4.64e4	4.49e4	5.95e4	3.62e4	2.14e5	2.31e4	2.67e4	1.18e5	1.52e5
1/3-11	DC	3192	53994	5.07e5	4.80e5	5.49e5	8.71e5	2.72e5	2.59e5	5.77e4	5.32e4	4.46e4	7.13e4	7.43e4	5.68e4	1.74e5	1.51e4	5.24e4	1.47e5	1.01e5
1/3-11	DC	3240	53999	8.42e5	1.00e6	1.07e6	1.26e6	4.27e5	4.16e5	6.75e4	5.90e4	5.97e4	8.29e4	9.26e4	6.43e4	1.83e5	1.82e4	5.25e4	1.22e5	1.10e5
1/3-11 T2	DC	2600	54002	2.17e5	1.75e6	3.50e5	3.26e5	1.03e5	1.30e5	9.22e4	9.87e4	9.67e4	8.68e4	1.24e5	9.23e4	4.05e5	3.53e4	7.69e4	3.00e5	3.38e5
1/3-11 T2	DC	3215	54003	2.45e6	1.97e6	2.82e6	4.62e6	1.62e6	1.49e6	3.14e5	2.56e5	2.96e5	4.48e5	4.80e5	3.76e5	9.47e5	1.19e5	3.33e5	6.81e5	6.08e5
1/3-11 T2	DC	3398	54005	1.09e6	1.56e6	1.96e6	9.40e5	7.14e5	3.46e5	4.49e4	3.34e4	2.95e4	4.87e4	4.85e4	2.63e4	1.15e5	1.24e4	2.40e4	4.57e4	6.08e4
1/3-11 T2	DC	3491	54007	3.26e5	2.38e5	2.88e5	3.73e5	1.37e5	1.43e5	3.14e4	2.84e4	2.68e4	5.16e4	5.35e4	3.08e4	1.21e5	1.03e4	2.60e4	5.33e4	6.55e4
1/3-11	Mud	1309	54009	4.00e4	2.66e4	5.81e4	7.69e4	2.60e4	3.08e4	9.47e3	7.00e3	7.05e3	1.11e4	1.23e4	8.41e3	2.48e4	3.22e3	8.44e3	1.29e4	1.42e4
1/3-11	Mud	3100	54010	3.30e4	2.82e4	4.62e4	5.99e4	2.10e4	2.38e4	6.49e3	6.13e3	5.27e3	8.04e3	9.27e3	6.22e3	1.79e4	2.57e3	5.82e3	8.17e3	1.02e4
1/3-11	Mud	3289	54011	3.66e4	2.98e4	5.06e4	6.11e4	2.23e4	2.60e4	7.38e3	5.93e3	5.31e3	7.85e3	8.74e3	5.51e3	1.60e4	2.16e3	4.40e3	9.11e3	9.39e3
1/3-11 T2	Mud	1268.50	54012	2.99e4	3.46e4	3.58e4	4.96e4	1.81e4	1.74e4	5.37e3	5.25e3	5.55e3	8.31e3	7.26e3	5.17e3	1.66e4	1.96e3	5.08e3	8.03e3	9.33e3
1/3-11 T2	Mud	3200	54013	2.14e4	1.89e4	3.25e4	3.87e4	1.39e4	1.52e4	4.53e3	4.86e3	4.38e3	5.96e3	6.56e3	4.14e3	1.29e4	1.53e3	4.04e3	7.12e3	8.06e3
1/3-11 T2	Mud	3595	54014	1.50e4	1.67e4	2.15e4	2.69e4	8.56e3	9.54e3	4.38e3	3.67e3	3.82e3	5.23e3	5.94e3	3.08e3	1.26e4	2.07e3	2.71e3	5.24e3	6.79e3
1/3-11 T2	COPL	3295.61	54307	1.77e6	1.10e6	3.48e6	4.27e6	1.96e6	1.25e6	4.97e5	3.58e5	1.94e5	5.15e5	4.44e5	2.90e5	8.83e5	1.55e5	2.37e5	3.87e5	5.67e5
1/3-11 T2	COPL	3296.23	54308	1.66e6	9.92e5	3.40e6	4.12e6	1.85e6	1.19e6	4.54e5	3.17e5	1.55e5	4.57e5	3.85e5	2.48e5	7.80e5	1.45e5	2.08e5	3.46e5	4.93e5
1/3-11 T2	COPL	3414.02	54309	2.14e6	3.71e6	4.11e6	1.61e6	1.70e6	7.34e5	8.96e4	5.61e4	2.23e4	9.54e4	8.93e4	2.44e4	2.16e5	3.51e4	2.66e4	6.07e4	1.41e5
1/3-11 T2	Oil	3294.50	54423T	2.82e6	1.58e6	6.95e6	7.83e6	3.71e6	2.26e6	7.78e5	5.60e5	2.11e5	6.77e5	5.10e5	3.69e5	1.08e6	2.16e5	3.04e5	4.89e5	6.74e5
1/3-11 T2	Oil	3294.50	54424T	2.46e6	1.33e6	5.69e6	6.54e6	2.93e6	1.80e6	6.69e5	4.66e5	1.97e5	5.67e5	4.41e5	3.34e5	8.88e5	1.89e5	2.62e5	4.43e5	5.49e5
1/3-11 T2	Oil	3294.50	54425T	3.09e6	1.73e6	7.89e6	9.23e6	4.22e6	2.49e6	8.48e5	5.81e5	2.45e5	7.19e5	5.53e5	4.51e5	1.24e6	2.50e5	3.59e5	5.71e5	7.48e5
1/3-11 T2	Oil	3294.50	54426T	3.21e6	1.81e6	8.00e6	9.44e6	4.33e6	2.57e6	8.93e5	6.06e5	2.60e5	7.76e5	5.96e5	4.33e5	1.28e6	2.54e5	3.67e5	6.03e5	8.12e5
1/3-11 T2	Oil	3294.50	54427T	3.24e6	1.81e6	8.21e6	9.36e6	4.18e6	2.62e6	9.84e5	6.50e5	2.64e5	8.39e5	6.09e5	4.56e5	1.34e6	2.60e5	3.90e5	6.17e5	8.21e5



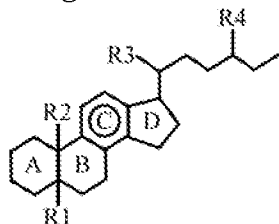
Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 16. continued, GCMS SIR of aromatic compounds (peak height)

Well	Sample type	Lower Depth (m)	APT ID	253			231											
				β SC29MA+	β SC29DMA	α SC29MA	α RC28MA+	β RC29MA+	β RC29DMA	α RC29MA	C20TA	C21TA	SC26TA	RC26TA+	SC27TA	SC28TA	RC27TA	RC28TA
1/3-11	DC	2500	53991	1.26e5	4.47e4	8.45e4	3.76e4	3.13e4	2.28e4	5.11e4	2.19e5	5.78e4	1.05e5	8.27e4				
1/3-11	DC	3192	53994	8.39e4	5.78e4	1.19e5	4.49e4	1.28e5	1.58e5	7.62e4	2.34e5	8.21e4	8.78e4	8.42e4				
1/3-11	DC	3240	53999	1.05e5	4.93e4	1.12e5	4.31e4	1.86e5	2.13e5	1.14e5	3.20e5	1.36e5	1.12e5	1.33e5				
1/3-11 T2	DC	2600	54002	2.57e5	1.24e5	2.25e5	1.13e5	5.69e4	4.10e4	5.83e4	2.16e5	5.41e4	8.85e4	6.57e4				
1/3-11 T2	DC	3215	54003	6.67e5	3.89e5	5.89e5	3.16e5	1.07e6	1.08e6	9.42e5	2.35e6	9.43e5	9.37e5	8.73e5				
1/3-11 T2	DC	3398	54005	6.73e4	2.10e4	5.32e4	2.06e4	1.47e5	1.77e5	6.00e4	1.69e5	7.24e4	6.66e4	6.70e4				
1/3-11 T2	DC	3491	54007	7.10e4	2.38e4	5.05e4	1.89e4	6.74e4	8.36e4	3.51e4	9.59e4	3.50e4	3.62e4	3.06e4				
1/3-11	Mud	1309	54009	1.77e4	6.32e3	1.45e4	6.58e3	1.32e4	1.26e4	1.82e4	5.74e4	2.44e4	2.73e4	3.48e4				
1/3-11	Mud	3100	54010	1.20e4	5.04e3	8.98e3	5.35e3	9.94e3	1.01e4	1.17e4	3.23e4	1.51e4	1.47e4	1.76e4				
1/3-11	Mud	3289	54011	9.91e3	4.47e3	9.48e3	4.33e3	1.07e4	1.03e4	9.27e3	2.62e4	1.32e4	1.20e4	1.21e4				
1/3-11 T2	Mud	1268.50	54012	1.05e4	3.68e3	7.22e3	3.62e3	8.61e3	7.57e3	7.42e3	2.03e4	9.61e3	9.26e3	9.37e3				
1/3-11 T2	Mud	3200	54013	6.70e3	4.15e3	7.78e3	3.29e3	7.13e3	6.18e3	6.14e3	1.55e4	6.46e3	6.71e3	6.32e3				
1/3-11 T2	Mud	3595	54014	7.79e3	2.76e3	5.55e3	2.38e3	5.11e3	5.33e3	4.73e3	1.02e4	4.76e3	4.31e3	4.73e3				
1/3-11 T2	COPL	3295.61	54307	5.99e5	2.65e5	4.95e5	2.05e5	1.38e6	1.10e6	6.17e5	1.74e6	9.27e5	7.42e5	8.74e5				
1/3-11 T2	COPL	3296.23	54308	5.44e5	2.56e5	4.53e5	2.01e5	1.31e6	1.02e6	6.13e5	1.74e6	9.49e5	7.33e5	9.04e5				
1/3-11 T2	COPL	3414.02	54309	3.55e5	6.72e4	2.55e5	5.57e4	5.97e5	4.25e5	3.61e5	9.41e5	9.62e5	4.47e5	9.98e5				
1/3-11 T2	Oil	3294.50	54423T	7.20e5	3.80e5	6.55e5	2.78e5	2.20e6	1.80e6	1.00e6	2.92e6	1.51e6	1.19e6	1.44e6				
1/3-11 T2	Oil	3294.50	54424T	6.18e5	3.07e5	5.50e5	2.44e5	1.84e6	1.49e6	8.52e5	2.52e6	1.31e6	1.03e6	1.28e6				
1/3-11 T2	Oil	3294.50	54425T	8.20e5	4.15e5	7.36e5	3.14e5	2.45e6	1.97e6	1.15e6	3.24e6	1.72e6	1.34e6	1.65e6				
1/3-11 T2	Oil	3294.50	54426T	8.42e5	4.41e5	7.65e5	3.21e5	2.51e6	2.06e6	1.21e6	3.38e6	1.83e6	1.46e6	1.80e6				
1/3-11 T2	Oil	3294.50	54427T	8.88e5	4.53e5	7.97e5	3.45e5	2.64e6	2.10e6	1.26e6	3.54e6	1.94e6	1.47e6	1.88e6				

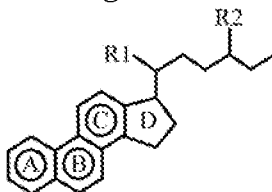
Abbreviation of aromatic biomarkers

C-ring monoaromatic steroid



R ₁	Substituents			Label
	R ₂	R ₃	R ₄	
				C ₂₁ MA
				C ₂₂ MA
β(H)	CH ₃	S(CH ₃)	H	βSC ₂₇ MA
β(CH ₃)	H	S(CH ₃)	H	βSC ₂₇ DMA
β(CH ₃)	H	R(CH ₃)	H	βRC ₂₇ DMA+
β(H)	CH ₃	R(CH ₃)	H	βRC ₂₇ MA
α(H)	CH ₃	S(CH ₃)	H	αSC ₂₇ MA
β(H)	CH ₃	S(CH ₃)	CH ₃	βSC ₂₈ MA+
α(CH ₃)	H	R(CH ₃)	H	αRC ₂₇ DMA+
β(CH ₃)	H	S(CH ₃)	CH ₃	βSC ₂₈ DMA
α(CH ₃)	H	S(CH ₃)	CH ₃	αSC ₂₇ DMA
α(H)	CH ₃	R(CH ₃)	H	αRC ₂₇ MA
α(H)	CH ₃	S(CH ₃)	CH ₃	αSC ₂₈ MA
β(H)	CH ₃	R(CH ₃)	CH ₃	βRC ₂₈ MA+
β(CH ₃)	H	R(CH ₃)	CH ₃	βRC ₂₈ DMA
β(H)	CH ₃	S(CH ₃)	C ₂ H ₅	βSC ₂₉ MA+
β(CH ₃)	H	S(CH ₃)	C ₂ H ₅	βSC ₂₉ DMA
α(H)	CH ₃	S(CH ₃)	C ₂ H ₅	αSC ₂₉ MA
α(H)	CH ₃	R(CH ₃)	CH ₃	αRC ₂₈ MA+
β(H)	CH ₃	R(CH ₃)	C ₂ H ₅	βRC ₂₉ MA+
β(CH ₃)	H	R(CH ₃)	C ₂ H ₅	βRC ₂₉ DMA
α(H)	CH ₃	R(CH ₃)	C ₂ H ₅	αRC ₂₉ MA

ABC-ring triaromatic steroids



Substituents		Label
R ₁	R ₂	
CH ₃	H	C ₂₀ TA
CH ₃	CH ₃	C ₂₁ TA
S(CH ₃)	C ₆ H ₁₃	SC ₂₆ TA
R(CH ₃)	C ₆ H ₁₃	RC ₂₆ TA+
S(CH ₃)	C ₇ H ₁₅	SC ₂₇ TA
S(CH ₃)	C ₈ H ₁₇	SC ₂₈ TA
R(CH ₃)	C ₇ H ₁₅	RC ₂₇ TA
R(CH ₃)	C ₈ H ₁₇	RC ₂₈ TA

Polycyclic aromatic hydrocarbons and sulphur compounds

MN	Methylnaphthalene
EN	Ethylnaphthalene
DMN	Dimethylnaphthalene
TMN	Trimethylnaphthalene
P	Phenanthrene
MP	Methylphenanthrene
EP	Ethylphenanthrene
DMP	Dimethylphenanthrene
DBT	Dibenzothiophene
MDBT	Methyldibenzothiophene



Table 17. GCMS SIR of aromatic compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	142							156							170				
				2-MN	1-MN	2-EN	1-EN	2,6-DMN	2,7-DMN	1,3-+1,7-DMN	1,6-DMN	2,3-+1,4-DMN	1,5-DMN	1,2-DMN	1,8-DMN	1,3,7-TMN	1,3,6-TMN	1,3,5-+1,4,6-TMN	2,3,6-TMN	1,2,7-TMN		
1/3-11	DC	2500	53991	1.48e4	1.17e4	1.25e3	8.69e2	3.03e3	3.67e3	7.94e3	6.42e3	2.88e3	1.98e3	2.01e3	1.85e2	2.05e3	3.18e3	3.09e3	1.83e3	3.04e3		
1/3-11	DC	3192	53994	6.49e3	4.74e3	6.60e2	3.94e2	2.57e3	2.89e3	6.45e3	4.18e3	2.11e3	1.31e3	1.15e3	1.04e2	2.73e3	3.62e3	2.90e3	2.25e3	9.61e2		
1/3-11	DC	3240	53999	6.15e3	4.83e3	5.84e2	3.83e2	2.08e3	2.34e3	5.61e3	3.66e3	1.99e3	1.28e3	1.02e3	6.90e1	2.29e3	2.82e3	2.58e3	2.10e3	8.72e2		
1/3-11 T2	DC	2600	54002	1.30e4	9.97e3	1.44e3	9.68e2	3.92e3	4.56e3	1.04e4	8.41e3	3.77e3	2.43e3	2.50e3	2.32e2	2.74e3	4.23e3	3.78e3	2.36e3	3.39e3		
1/3-11 T2	DC	3215	54003	1.29e4	1.02e4	1.56e3	1.06e3	4.89e3	5.91e3	1.26e4	9.62e3	5.06e3	3.00e3	2.53e3	9.10e1	6.11e3	8.44e3	7.04e3	6.09e3	2.80e3		
1/3-11 T2	DC	3398	54005	2.35e4	1.60e4	1.92e3	1.37e3	3.94e3	5.03e3	1.13e4	1.09e4	4.70e3	2.32e3	3.18e3	1.18e2	2.97e3	4.40e3	3.63e3	2.84e3	2.60e3		
1/3-11 T2	DC	3491	54007	3.09e3	2.46e3	3.82e2	2.44e2	1.40e3	1.67e3	3.80e3	2.43e3	1.42e3	8.72e2	7.41e2	9.00e1	1.93e3	2.29e3	2.08e3	1.68e3	7.58e2		
1/3-11	Mud	1309	54009	1.32e4	9.45e3	7.37e2	5.65e2	2.51e3	3.12e3	5.64e3	4.25e3	1.88e3	1.48e3	1.06e3	7.60e1	1.73e3	2.32e3	1.99e3	1.40e3	5.44e2		
1/3-11	Mud	3100	54010	1.22e4	8.00e3	6.48e2	5.11e2	2.18e3	2.78e3	5.08e3	3.81e3	1.63e3	1.34e3	1.00e3	1.07e2	1.59e3	2.03e3	1.74e3	1.23e3	5.86e2		
1/3-11	Mud	3289	54011	1.20e4	7.93e3	6.73e2	5.27e2	2.33e3	2.91e3	5.23e3	3.85e3	1.72e3	1.38e3	1.03e3	1.01e2	1.59e3	2.11e3	1.75e3	1.29e3	5.85e2		
1/3-11 T2	Mud	1268.50	54012	1.10e4	6.94e3	5.60e2	4.24e2	1.90e3	2.53e3	4.42e3	3.41e3	1.47e3	1.17e3	8.96e2	1.00e2	1.40e3	1.85e3	1.53e3	1.12e3	5.00e2		
1/3-11 T2	Mud	3200	54013	1.03e4	6.69e3	5.62e2	4.64e2	2.01e3	2.51e3	4.33e3	3.34e3	1.42e3	1.19e3	8.86e2	9.10e1	1.33e3	1.77e3	1.45e3	1.08e3	5.28e2		
1/3-11 T2	Mud	3595	54014	8.16e3	5.19e3	4.50e2	3.81e2	1.43e3	2.09e3	3.36e3	2.69e3	1.12e3	1.00e3	7.03e2	9.90e1	1.04e3	1.42e3	1.15e3	8.66e2	4.47e2		
1/3-11 T2	COPL	3295.61	54307	1.54e5	1.03e5	1.19e4	7.67e3	2.35e4	3.00e4	6.08e4	5.59e4	2.11e4	1.14e4	1.16e4	1.86e2	1.41e4	2.05e4	1.65e4	1.20e4	7.08e3		
1/3-11 T2	COPL	3296.23	54308	1.74e5	1.19e5	1.43e4	9.31e3	2.90e4	3.80e4	7.67e4	7.08e4	2.76e4	1.50e4	1.53e4	2.21e2	1.99e4	2.95e4	2.35e4	1.78e4	1.03e4		
1/3-11 T2	COPL	3414.02	54309	2.71e5	1.72e5	1.90e4	1.37e4	3.07e4	4.34e4	8.75e4	1.05e5	3.77e4	1.88e4	2.69e4	2.77e2	1.68e4	2.81e4	2.25e4	1.94e4	2.63e4		
1/3-11 T2	Oil	3294.50	54423T	6.85e5	4.50e5	4.81e4	2.99e4	9.82e4	1.21e5	2.54e5	2.29e5	8.99e4	4.62e4	4.80e4	5.65e2	6.25e4	8.98e4	7.29e4	5.30e4	3.04e4		
1/3-11 T2	Oil	3294.50	54424T	6.95e5	4.47e5	4.74e4	2.87e4	9.64e4	1.17e5	2.43e5	2.19e5	8.51e4	4.42e4	4.63e4	5.57e2	5.71e4	8.53e4	6.74e4	4.99e4	2.82e4		
1/3-11 T2	Oil	3294.50	54425T	7.44e5	4.79e5	5.25e4	3.31e4	1.04e5	1.32e5	2.75e5	2.51e5	9.63e4	5.03e4	5.36e4	6.24e2	6.65e4	9.94e4	7.99e4	5.96e4	3.31e4		
1/3-11 T2	Oil	3294.50	54426T	7.67e5	5.03e5	5.51e4	3.38e4	1.08e5	1.37e5	2.77e5	2.58e5	9.89e4	5.12e4	5.44e4	6.33e2	6.91e4	1.01e5	8.27e4	6.20e4	3.47e4		
1/3-11 T2	Oil	3294.50	54427T	7.62e5	5.00e5	5.70e4	3.45e4	1.10e5	1.42e5	2.99e5	2.66e5	1.03e5	5.38e4	5.64e4	6.79e2	7.36e4	1.06e5	8.57e4	6.48e4	3.62e4		



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 17. continued, GCMS SIR of aromatic compounds (amounts in ng/g)

m/e				170	178	192	206														
Well	Sample type	Lower Depth (m)	APT ID	1,6,7 + 1,2,6-TMN	1,2,4-TMN	1,2,5-TMN	P	3-MP	2-MP	9-MP	1-MP	2-EP-9-EP+ 3,6-DMP	1-EP	2,6- + 2,7- + 3,5-DMP	1,3- + 2,10- + 3,9- + 3,10-DMP	1,6- + 2,5- + 2,9-DMP	1,7-DMP	2,3-DMP	1,9- + 4,9- + 4,10-DMP	1,8-DMP	
1/3-11	DC	2500	53991	2.20e3	6.77e2	5.20e3	5.94e3	2.29e3	2.59e3	2.57e3	2.53e3	4.83e2	8.95e2	4.63e2	1.79e3	1.02e3	1.47e3	6.90e2	4.28e2	2.72e2	
1/3-11	DC	3192	53994	2.06e3	6.33e2	1.19e3	3.87e3	2.11e3	2.38e3	2.39e3	1.81e3	5.55e2	1.04e3	5.81e2	2.17e3	1.05e3	8.45e2	7.52e2	5.15e2	2.39e2	
1/3-11	DC	3240	53999	2.01e3	5.16e2	1.36e3	6.61e3	2.64e3	3.07e3	3.70e3	3.31e3	6.87e2	1.40e3	7.14e2	2.86e3	1.55e3	1.29e3	1.10e3	8.20e2	3.80e2	
1/3-11 T2	DC	2600	54002	2.75e3	9.87e2	5.50e3	4.47e3	1.48e3	1.75e3	1.82e3	1.69e3	3.21e2	5.20e2	2.91e2	1.05e3	5.91e2	8.18e2	3.95e2	2.75e2	1.90e2	
1/3-11 T2	DC	3215	54003	5.66e3	1.37e3	3.84e3	2.40e4	1.03e4	1.26e4	1.99e4	1.46e4	2.53e3	4.60e3	2.58e3	1.52e4	7.58e3	6.54e3	3.50e3	4.81e3	2.31e3	
1/3-11 T2	DC	3398	54005	3.51e3	8.87e2	5.03e3	1.69e4	4.52e3	5.61e3	6.20e3	4.92e3	8.53e2	1.43e3	7.69e2	3.24e3	1.76e3	2.00e3	1.18e3	9.63e2	4.84e2	
1/3-11 T2	DC	3491	54007	1.61e3	4.88e2	9.97e2	2.95e3	1.73e3	1.80e3	1.64e3	1.42e3	4.38e2	8.53e2	4.69e2	1.52e3	7.86e2	5.87e2	6.47e2	3.57e2	1.57e2	
1/3-11	Mud	1309	54009	1.47e3	3.80e2	7.24e2	2.31e3	1.36e3	1.49e3	1.49e3	1.24e3	4.49e2	7.18e2	4.20e2	1.53e3	8.61e2	6.17e2	5.52e2	3.29e2	1.18e2	
1/3-11	Mud	3100	54010	1.36e3	3.64e2	7.03e2	2.16e3	1.29e3	1.45e3	1.35e3	1.15e3	4.10e2	6.26e2	3.67e2	1.31e3	7.65e2	5.09e2	4.66e2	2.87e2	9.70e1	
1/3-11	Mud	3289	54011	1.36e3	3.96e2	7.23e2	2.06e3	1.34e3	1.41e3	1.26e3	1.13e3	4.02e2	6.02e2	3.57e2	1.26e3	7.17e2	5.01e2	4.75e2	2.66e2	9.80e1	
1/3-11 T2	Mud	1268.50	54012	1.18e3	3.41e2	6.04e2	2.01e3	1.30e3	1.42e3	1.22e3	1.09e3	3.83e2	5.92e2	3.50e2	1.13e3	6.88e2	4.90e2	4.54e2	2.46e2	8.90e1	
1/3-11 T2	Mud	3200	54013	1.18e3	3.27e2	6.56e2	1.83e3	1.05e3	1.14e3	1.01e3	8.76e2	3.30e2	4.68e2	2.88e2	9.72e2	5.86e2	3.73e2	3.80e2	2.27e2	7.90e1	
1/3-11 T2	Mud	3595	54014	9.63e2	2.67e2	5.60e2	1.51e3	8.18e2	8.93e2	8.01e2	6.81e2	2.41e2	3.37e2	1.98e2	7.12e2	4.32e2	3.08e2	2.62e2	1.51e2	5.90e1	
1/3-11 T2	COPL	3295.61	54307	1.32e4	2.32e3	1.10e4	4.37e4	1.75e4	1.96e4	3.03e4	2.25e4	3.58e3	5.65e3	3.02e3	2.36e4	1.18e4	9.69e3	4.28e3	7.47e3	3.17e3	
1/3-11 T2	COPL	3296.23	54308	1.92e4	3.37e3	1.59e4	6.89e4	2.65e4	3.01e4	4.62e4	3.37e4	5.23e3	7.81e3	4.55e3	3.62e4	1.81e4	1.44e4	6.15e3	1.17e4	4.92e3	
1/3-11 T2	COPL	3414.02	54309	3.25e4	5.15e3	5.42e4	2.76e5	6.88e4	8.65e4	1.03e5	8.86e4	1.03e4	1.44e4	6.94e3	4.63e4	2.49e4	3.17e4	1.13e4	1.49e4	7.02e3	
1/3-11 T2	Oil	3294.50	54423T	5.70e4	9.48e3	4.80e4	1.98e5	7.03e4	8.13e4	1.28e5	9.51e4	1.31e4	2.03e4	1.13e4	9.25e4	4.28e4	3.80e4	1.46e4	2.99e4	1.20e4	
1/3-11 T2	Oil	3294.50	54424T	5.32e4	8.98e3	4.66e4	1.92e5	7.18e4	7.77e4	1.26e5	9.21e4	1.31e4	2.05e4	1.12e4	9.32e4	4.46e4	3.76e4	1.49e4	2.97e4	1.23e4	
1/3-11 T2	Oil	3294.50	54425T	6.10e4	1.06e4	5.39e4	2.10e5	7.42e4	8.75e4	1.31e5	9.66e4	1.37e4	2.03e4	1.15e4	9.43e4	4.58e4	3.93e4	1.53e4	3.08e4	1.24e4	
1/3-11 T2	Oil	3294.50	54426T	6.54e4	1.12e4	5.54e4	2.15e5	7.78e4	8.60e4	1.34e5	9.93e4	1.38e4	2.13e4	1.19e4	9.80e4	4.63e4	3.99e4	1.61e4	3.16e4	1.29e4	
1/3-11 T2	Oil	3294.50	54427T	6.79e4	1.14e4	5.74e4	2.25e5	7.86e4	8.83e4	1.39e5	1.04e5	1.44e4	2.32e4	1.23e4	1.03e5	4.81e4	4.19e4	1.70e4	3.33e4	1.42e4	



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 17. continued, GCMS SIR of aromatic compounds (amounts in ng/g)

	m/e	206	219	184	198	253															
Well	Sample type	Lower Depth (m)	APT ID	1,2-DMP	Retene	DBT	4-MDBT	(3+2)-MDBT	1-MDBT	C21MA	C22MA	βSC27MA	βSC27DMA	βRC27MA+ βRC27DMA	αSC27MA	βSC28MA+ βSC28DMA+ αRC27DMA	αSC27DMA	αRC27MA	αSC28MA	βRC28MA+ βRC28DMA	
1/3-11	DC	2500	53991	2.44e2	3.32e3	3.86e2	3.11e2	1.06e2	1.53e2	1.80e2	1.53e2	2.07e2	2.01e2	2.66e2	1.62e2	9.54e2	1.03e2	1.19e2	5.28e2	6.79e2	
1/3-11	DC	3192	53994	2.09e2	1.98e2	2.26e2	3.59e2	1.12e2	1.07e2	3.60e1	3.30e1	2.80e1	4.50e1	4.60e1	3.60e1	1.09e2	9.00e0	3.30e1	9.20e1	6.30e1	
1/3-11	DC	3240	53999	3.59e2	4.27e2	4.56e2	5.38e2	1.82e2	1.78e2	4.30e1	3.80e1	3.80e1	5.30e1	5.90e1	4.10e1	1.17e2	1.20e1	3.40e1	7.80e1	7.10e1	
1/3-11 T2	DC	2600	54002	1.68e2	1.35e3	2.71e2	2.52e2	8.00e1	1.00e2	1.17e2	1.25e2	1.23e2	1.10e2	1.57e2	1.17e2	5.14e2	4.50e1	9.70e1	3.80e2	4.28e2	
1/3-11 T2	DC	3215	54003	1.46e3	1.18e3	1.68e3	2.76e3	9.65e2	8.92e2	2.34e2	1.91e2	2.21e2	3.34e2	3.58e2	2.80e2	7.06e2	8.90e1	2.49e2	5.08e2	4.53e2	
1/3-11 T2	DC	3398	54005	6.03e2	8.63e2	1.08e3	5.20e2	3.94e2	1.91e2	3.80e1	2.80e1	2.50e1	4.10e1	4.10e1	2.20e1	9.80e1	1.00e1	2.00e1	3.90e1	5.10e1	
1/3-11 T2	DC	3491	54007	1.80e2	1.32e2	1.59e2	2.06e2	7.60e1	7.90e1	3.20e1	2.90e1	2.80e1	5.30e1	5.50e1	3.20e1	1.25e2	1.10e1	2.70e1	5.50e1	6.70e1	
1/3-11	Mud	1309	54009	1.40e2	9.30e1	2.03e2	2.69e2	9.10e1	1.07e2	5.60e1	4.10e1	4.20e1	6.50e1	7.30e1	5.00e1	1.46e2	1.90e1	5.00e1	7.60e1	8.40e1	
1/3-11	Mud	3100	54010	1.17e2	1.00e2	1.65e2	2.13e2	7.50e1	8.50e1	4.10e1	3.80e1	3.30e1	5.00e1	5.80e1	3.90e1	1.12e2	1.60e1	3.70e1	5.10e1	6.40e1	
1/3-11	Mud	3289	54011	1.19e2	9.70e1	1.64e2	1.99e2	7.30e1	8.40e1	4.20e1	3.40e1	3.00e1	4.50e1	5.00e1	3.10e1	9.10e1	1.20e1	2.50e1	5.20e1	5.40e1	
1/3-11 T2	Mud	1268.50	54012	1.09e2	1.27e2	1.31e2	1.81e2	6.60e1	6.40e1	3.50e1	3.40e1	3.60e1	5.30e1	4.70e1	3.30e1	1.07e2	1.30e1	3.30e1	5.20e1	6.00e1	
1/3-11 T2	Mud	3200	54013	8.40e1	7.40e1	1.28e2	1.52e2	5.50e1	6.00e1	3.40e1	3.60e1	3.30e1	4.40e1	4.90e1	3.10e1	9.60e1	1.10e1	3.00e1	5.30e1	6.00e1	
1/3-11 T2	Mud	3595	54014	6.10e1	6.80e1	8.80e1	1.10e2	3.50e1	3.90e1	3.20e1	2.70e1	2.80e1	3.80e1	4.40e1	2.30e1	9.20e1	1.50e1	2.00e1	3.80e1	5.00e1	
1/3-11 T2	COPL	3295.61	54307	1.88e3	1.17e3	3.70e3	4.54e3	2.09e3	1.33e3	6.38e2	4.59e2	2.49e2	6.61e2	5.70e2	3.72e2	1.13e3	1.99e2	3.04e2	4.97e2	7.28e2	
1/3-11 T2	COPL	3296.23	54308	2.85e3	1.70e3	5.83e3	7.07e3	3.17e3	2.04e3	8.96e2	6.25e2	3.05e2	9.01e2	7.59e2	4.89e2	1.54e3	2.85e2	4.11e2	6.82e2	9.71e2	
1/3-11 T2	COPL	3414.02	54309	9.36e3	1.62e4	1.80e4	7.05e3	7.43e3	3.21e3	4.75e2	2.98e2	1.18e2	5.06e2	4.74e2	1.30e2	1.15e3	1.86e2	1.41e2	3.22e2	7.49e2	
1/3-11 T2	Oil	3294.50	54423T	6.93e3	3.88e3	1.71e4	1.92e4	9.11e3	5.54e3	2.24e3	1.62e3	6.08e2	1.95e3	1.47e3	1.06e3	3.12e3	6.25e2	8.78e2	1.41e3	1.94e3	
1/3-11 T2	Oil	3294.50	54424T	7.26e3	3.92e3	1.68e4	1.93e4	8.66e3	5.31e3	2.31e3	1.61e3	6.81e2	1.96e3	1.52e3	1.15e3	3.07e3	6.51e2	9.04e2	1.53e3	1.90e3	
1/3-11 T2	Oil	3294.50	54425T	7.21e3	4.02e3	1.84e4	2.15e4	9.84e3	5.80e3	2.40e3	1.65e3	6.94e2	2.04e3	1.57e3	1.28e3	3.52e3	7.07e2	1.02e3	1.62e3	2.12e3	
1/3-11 T2	Oil	3294.50	54426T	7.32e3	4.12e3	1.82e4	2.15e4	9.86e3	5.86e3	2.47e3	1.68e3	7.21e2	2.15e3	1.65e3	1.20e3	3.54e3	7.04e2	1.02e3	1.67e3	2.25e3	
1/3-11 T2	Oil	3294.50	54427T	7.61e3	4.26e3	1.93e4	2.20e4	9.82e3	6.16e3	2.74e3	1.81e3	7.35e2	2.34e3	1.70e3	1.27e3	3.72e3	7.23e2	1.09e3	1.72e3	2.29e3	



Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

Table 17. continued, GCMS SIR of aromatic compounds (amounts in ng/g)

Well	Sample type	Lower Depth (m)	APT ID	253			231								
				β SC29MA+ β SC29DMA	α SC29MA	α RC28MA+ β RC29MA+ β RC29DMA	α RC29MA	C20TA	C21TA	SC26TA	RC26TA+ SC27TA	SC28TA	RC27TA	RC28TA	
1/3-11	DC	2500	53991	5.63e2	1.99e2	3.77e2	1.68e2	1.40e2	1.02e2	2.28e2	9.79e2	2.58e2	4.68e2	3.69e2	
1/3-11	DC	3192	53994	5.20e1	3.60e1	7.40e1	2.80e1	8.00e1	9.90e1	4.80e1	1.47e2	5.10e1	5.50e1	5.30e1	
1/3-11	DC	3240	53999	6.80e1	3.20e1	7.20e1	2.80e1	1.19e2	1.36e2	7.30e1	2.05e2	8.70e1	7.20e1	8.50e1	
1/3-11 T2	DC	2600	54002	3.25e2	1.57e2	2.85e2	1.43e2	7.20e1	5.20e1	7.40e1	2.74e2	6.90e1	1.12e2	8.30e1	
1/3-11 T2	DC	3215	54003	4.97e2	2.90e2	4.39e2	2.35e2	7.95e2	8.08e2	7.02e2	1.75e3	7.03e2	6.99e2	6.51e2	
1/3-11 T2	DC	3398	54005	5.70e1	1.80e1	4.50e1	1.70e1	1.24e2	1.50e2	5.10e1	1.43e2	6.10e1	5.60e1	5.70e1	
1/3-11 T2	DC	3491	54007	7.30e1	2.40e1	5.20e1	1.90e1	6.90e1	8.60e1	3.60e1	9.90e1	3.60e1	3.70e1	3.10e1	
1/3-11	Mud	1309	54009	1.04e2	3.70e1	8.50e1	3.90e1	7.80e1	7.50e1	1.07e2	3.38e2	1.44e2	1.61e2	2.05e2	
1/3-11	Mud	3100	54010	7.50e1	3.20e1	5.60e1	3.40e1	6.20e1	6.40e1	7.40e1	2.03e2	9.50e1	9.20e1	1.10e2	
1/3-11	Mud	3289	54011	5.70e1	2.60e1	5.40e1	2.50e1	6.10e1	5.90e1	5.30e1	1.50e2	7.50e1	6.90e1	6.90e1	
1/3-11 T2	Mud	1268.50	54012	6.70e1	2.40e1	4.60e1	2.30e1	5.50e1	4.90e1	4.80e1	1.31e2	6.20e1	6.00e1	6.00e1	
1/3-11 T2	Mud	3200	54013	5.00e1	3.10e1	5.80e1	2.40e1	5.30e1	4.60e1	4.60e1	1.15e2	4.80e1	5.00e1	4.70e1	
1/3-11 T2	Mud	3595	54014	5.70e1	2.00e1	4.10e1	1.70e1	3.80e1	3.90e1	3.50e1	7.50e1	3.50e1	3.20e1	3.50e1	
1/3-11 T2	COPL	3295.61	54307	7.69e2	3.40e2	6.36e2	2.63e2	1.77e3	1.42e3	7.92e2	2.24e3	1.19e3	9.53e2	1.12e3	
1/3-11 T2	COPL	3296.23	54308	1.07e3	5.05e2	8.94e2	3.97e2	2.59e3	2.01e3	1.21e3	3.42e3	1.87e3	1.45e3	1.78e3	
1/3-11 T2	COPL	3414.02	54309	1.88e3	3.57e2	1.35e3	2.96e2	3.17e3	2.25e3	1.91e3	4.99e3	5.10e3	2.37e3	5.29e3	
1/3-11 T2	Oil	3294.50	54423T	2.08e3	1.10e3	1.89e3	8.03e2	6.34e3	5.20e3	2.89e3	8.43e3	4.36e3	3.43e3	4.14e3	
1/3-11 T2	Oil	3294.50	54424T	2.13e3	1.06e3	1.90e3	8.41e2	6.35e3	5.15e3	2.94e3	8.71e3	4.53e3	3.57e3	4.43e3	
1/3-11 T2	Oil	3294.50	54425T	2.32e3	1.18e3	2.08e3	8.88e2	6.94e3	5.57e3	3.27e3	9.17e3	4.87e3	3.79e3	4.67e3	
1/3-11 T2	Oil	3294.50	54426T	2.33e3	1.22e3	2.12e3	8.89e2	6.95e3	5.71e3	3.35e3	9.37e3	5.07e3	4.05e3	4.99e3	
1/3-11 T2	Oil	3294.50	54427T	2.48e3	1.26e3	2.22e3	9.61e2	7.36e3	5.86e3	3.52e3	9.87e3	5.40e3	4.09e3	5.23e3	

Table 18. Isotopes of fractions, $\delta^{13}C$ (‰ PDB)

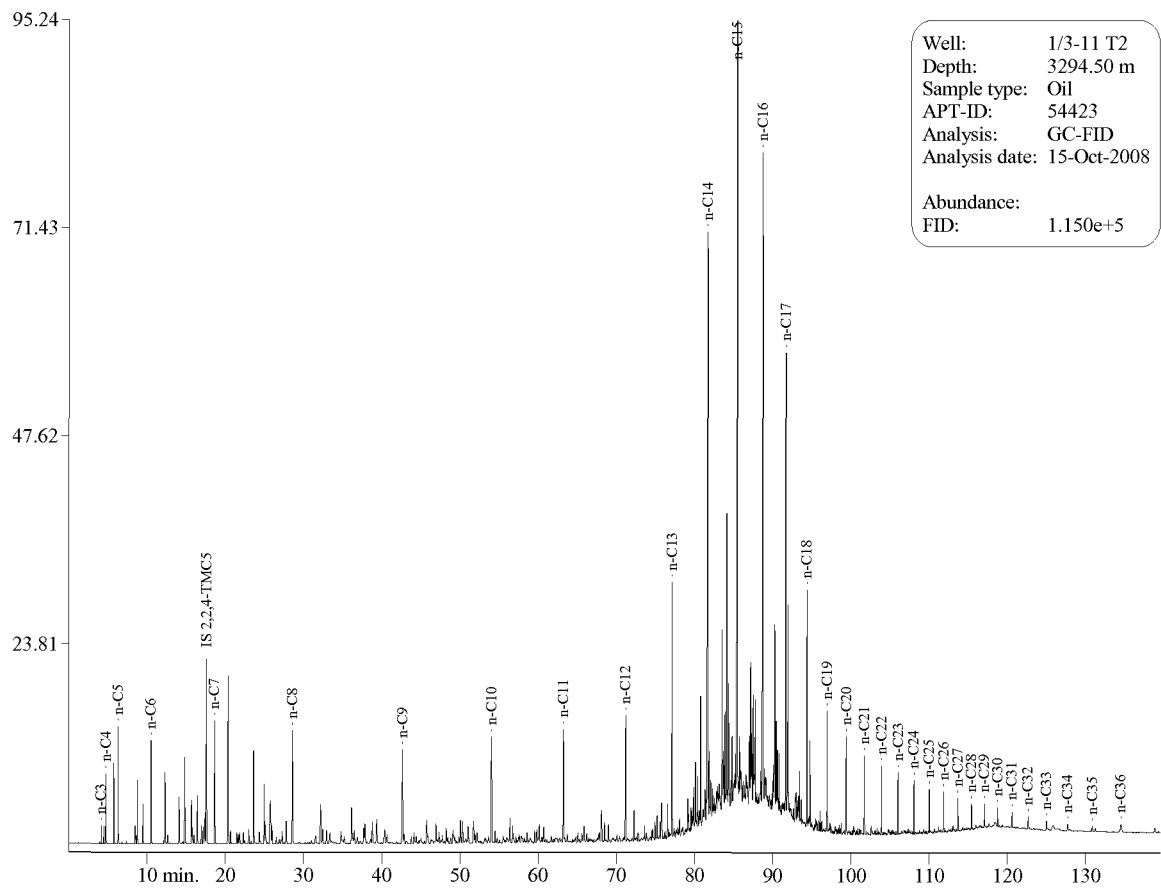
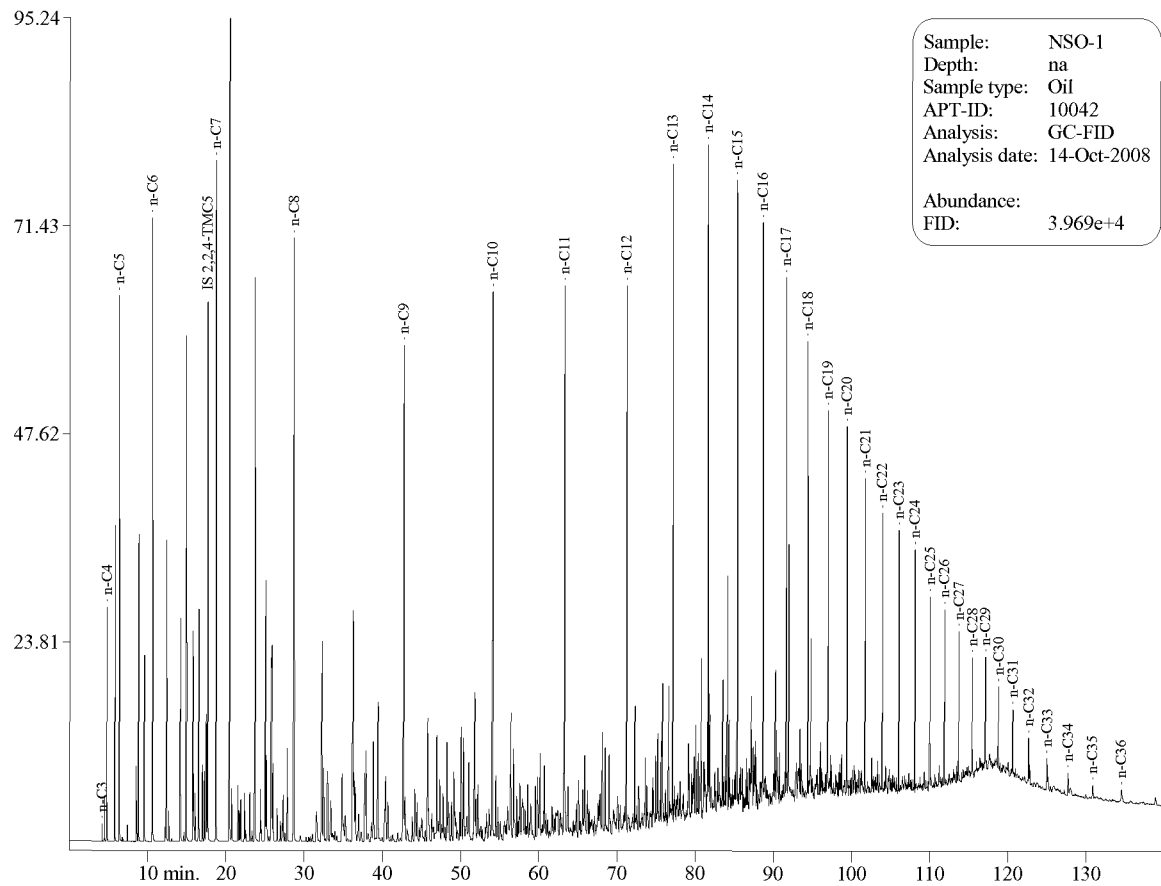
Well	Sample type	Lower Depth (m)	APT ID	$\delta^{13}C$ -Oil/EOM	$\delta^{13}C$ -Sat	$\delta^{13}C$ -Aro	$\delta^{13}C$ -Pol	$\delta^{13}C$ -Asp	$\delta^{13}C$ -Ker
1/3-11	Mud	1309	54009	-30.6	-30.9				
1/3-11	Mud	3100	54010	-30.9	-30.9				
1/3-11	Mud	3289	54011	-30.8	-31.1				
1/3-11 T2	Mud	1268.50	54012	-30.9	-31.1				
1/3-11 T2	Mud	3200	54013	-30.8	-31.0				
1/3-11 T2	Mud	3595	54014	-30.7	-30.8				
1/3-11 T2	Oil	3294.50	54423	-30.1	-30.4	-29.2			
1/3-11 T2	Oil	3294.50	54424	-30.1	-30.4	-29.1			
1/3-11 T2	Oil	3294.50	54425	-30.2	-30.4	-29.2			
1/3-11 T2	Oil	3294.50	54426	-30.2	-30.4	-29.1			
1/3-11 T2	Oil	3294.50	54427	-30.2	-30.3	-29.1			



GC Chromatograms of Whole Oil

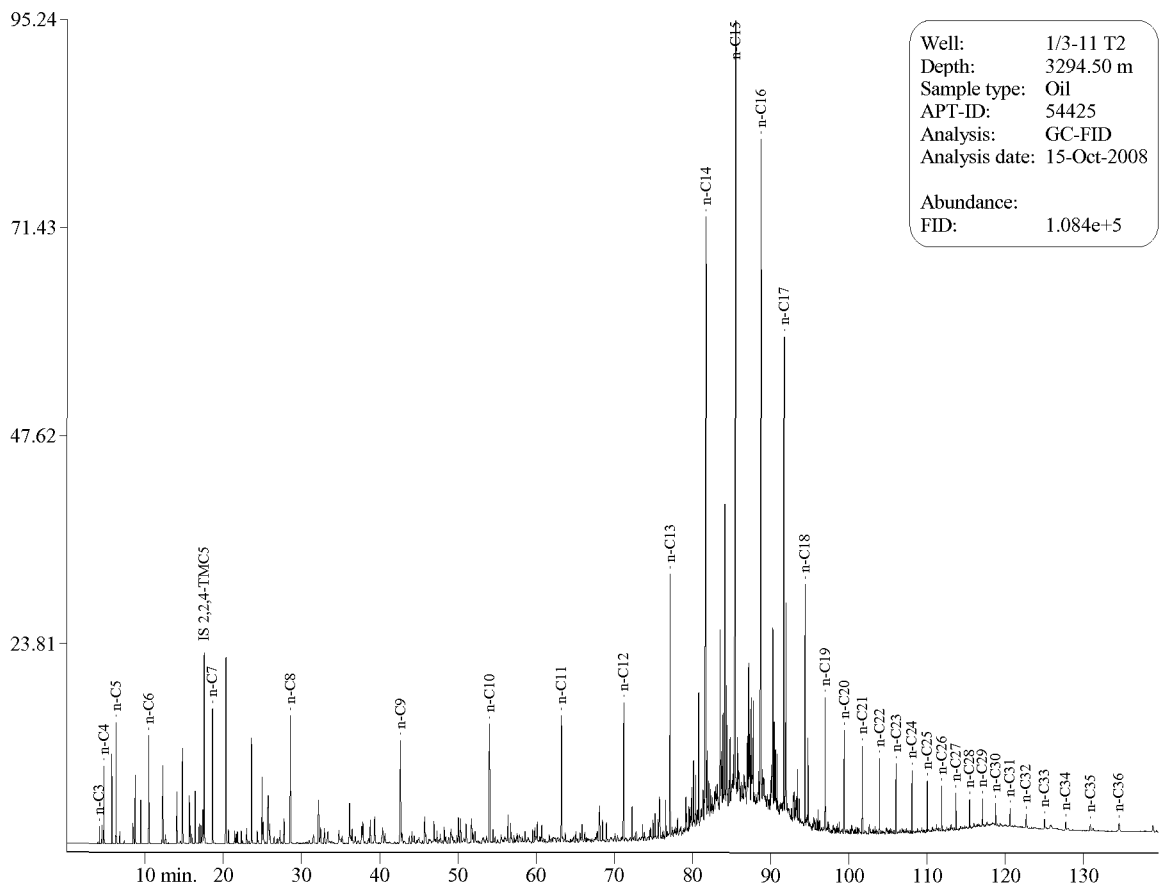
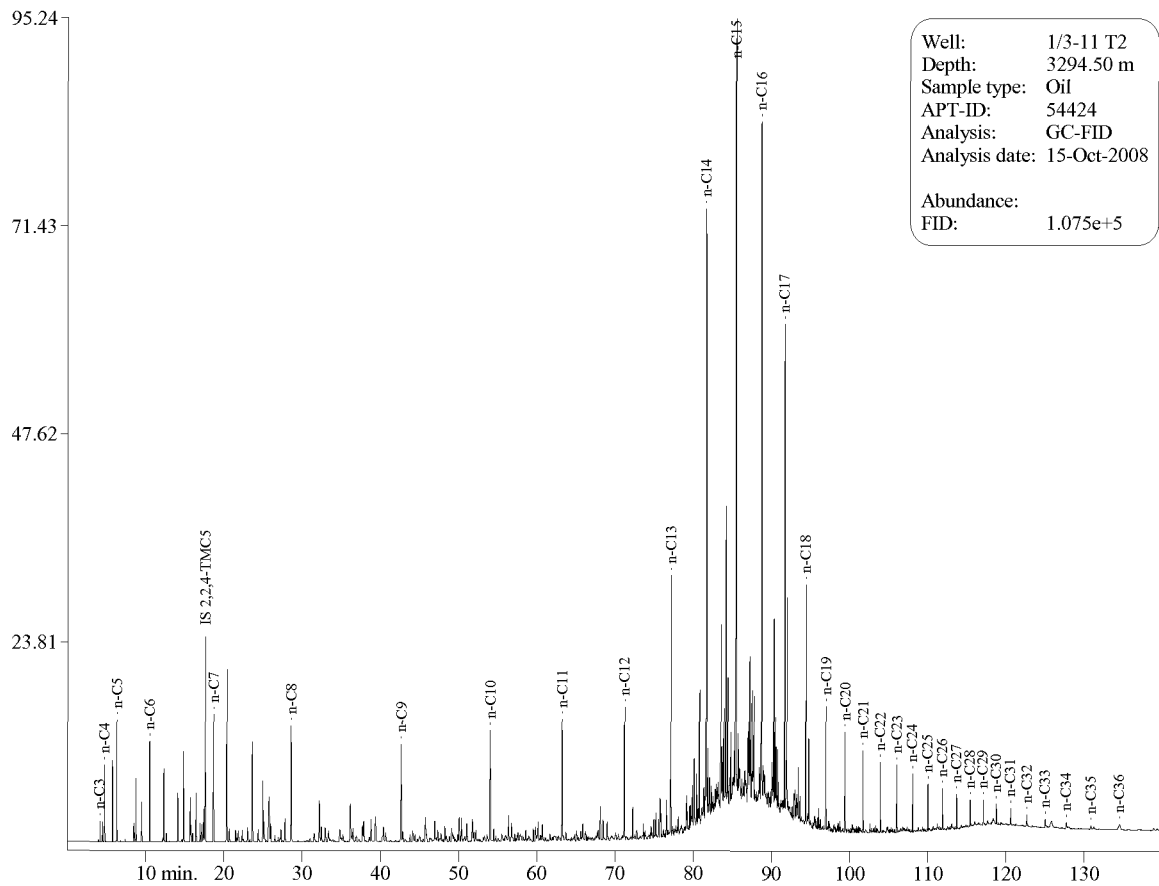


Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)





Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)





Geochemistry Report - Wells 1/3-11 and 1/3-11 T2 (Ipswich)

