McEACHERN No.1

WELL COMPLETION REPORT

VOLUME II

NCR vol. 2
McEachern-1

BUEL EXPLORATION N.L.

PEP 119

OTWAY BASIN

VICTORIA

McEACHERN No.1

WELL COMPLETION REPORT

VOLUME II

(W1017)

V.AKBARI

JULY, 1990

9. VITRINITE REFLECTANCE

GAS AND FUEL EXPLORATION N/L

A Subsidiary of the Gas and Fuel Corporation of Victoria

Registered Office: 171 Flinders St., Melbourne, 3000.
Address all mail to Box 1841Q, G.P.O. Melbourne, 3001.
Cable Address: 'Gafcor'. Telephone: 652 4222. Telex: AA31422.

When replying please quote

27th April, 1990

Mrs Joan Cook
Director
Keiraville Konsultants Pty Ltd
7 Dallas Street
KEIRAVILLE NSW 2500

Dear Mrs Cook

Re: McEACHERN NO. 1
T.O.C. VITRINITE REFLECTANCE

In reference to my telephone conversation of today, I am sending you the following washed - dried cutting samples for T.O.C measurement and vitrinite reflectance evaluation.

No.	Depth (m)
1	2355
2	2360
3	2365
4	2370
5	2375
6	2380
7	2384 (T.D.)

These samples have been taken from the Casterton Formation in the well McEachern No. 1 which was recently drilled in PEP 119 in the Otway Basin of Victoria.

Please do not hesitate to contact me on (03) 652 4807 if there is any problems regarding the samples.

Yours sincerely

V. Akbari

V. Akbari
Senior Geologist

KEIRAVILLE KONSULTANTS
PTY. LTD.

7 DALLAS STREET,
KEIRAVILLE, N.S.W.
AUSTRALIA, 2500

TELEPHONE: (042) 29 9843
INTERNATIONAL: 61-42-299843
TELEX: PUBTLX AA29262 - NBR WG083

V. Akbari
Gas and Fuel Exploration
171 Flinders Street
MELBOURNE 3000
Victoria

28.3.90

Dear Mr. Akbari

Please find enclosed Vitrinite Reflectance results sheets, work sheets and Total Organic Carbon results for 18 samples from McEACHERN No.1 and an account on Invoice No. 1662.

Yours sincerely

Joan Cook

Encl

McEACHERN NO. 1 TOC DATA

K.K. No.	Depth (m)	SWC No.	TOC
v2202	402.6	48	0.32
v2203	504.6	47	0.53
v2204	699.6	45	0.16
v2205	793.1	44	0.48
v2206	1048.6	42	0.40
v2207	1113.6	41	0.40
v2208	1174.5	39	0.63
v2209	1289.5	38	0.56
v2210	1364.6	36	16.10
v2211	1414.1	34	0.67
v2212	1461.6	32	0.34
v2213	1504.6	31	0.31
v2214	1573	28	1.20
v2215	1674.6	24	0.46
v2216	1741	23	0.53
v2217	1857.6	18	0.45
v2218	2023.6	13	0.36
v2219	2226.6	7	0.34

Ave 0.78

0.53

~~35.~~

5.85 0.47

McEACHERN NO. 1

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description Including Liptinite (Exinite) Fluorescence
V2202	402.6 SWC 48	0.41	0.27-0.50	27	Sparse phytoplankton and liptodetrinite, yellow to orange, rare to sparse cutinite, yellow to orange. (Sandstone>siltstone>>shaly coal. Shaly coal rare, V>>I>L. Vitrite. Dom common, I>V>or=L. Inertinite sparse to common, vitrinite and liptinite sparse. Pyrite common. Glauconite and iron oxide sparse.)
v2203	504.6 SWC 47	0.38	0.26-0.54	28	Sparse phytoplankton, yellow to orange, rare to sparse cutinite and liptodetrinite, yellow to orange, rare sporinite, yellow to dull orange. (Siltstone>sandstone. Dom common, I>V>L. Inertinite and vitrinite common, liptinite sparse. Sparse yellow oil droplets in siltstone. Pyrite common. Iron oxide sparse.)
v2204	699.6 SWC 45	0.42	0.32-0.53	15	Rare cutinite and liptodetrinite, yellow to orange, rare sporinite, yellow to dull orange, rare bituminite, brown. (Sandstone>carbonate>shaly coal. Shaly coal sparse, I>V>L. Inertinite>vitrinite>duroclarite= clarite. Dom sparse, I>V>L. Inertinite sparse, vitrinite rare to sparse, liptinite rare. Pyrite and iron oxide sparse.)
v2205	793.1 SWC 44	0.45	0.33-0.63	27	Sparse cutinite, yellow to dull orange, rare sporinite, dinoflagellates/acritarch and liptodetrinite, yellow to orange. (Sandstone>>shaly coal. Shaly coal sparse, V>I>L. Vitrite>clarite=vitrinertite. Dom abundant, I>V>L. Inertinite abundant, vitrinite common to abundant, liptinite sparse. Pyrite sparse. Iron oxide rare.)
v2206	1048.6 SWC 42	0.50	0.34-0.63	26	Rare to sparse cutinite, yellow to orange, rare sporinite, phytoplankton and liptodetrinite, yellow to orange. (Sandstone>>shaly coal>coal>siltstone. Coal common, I>>V>>L. Inertite>vitrite. Shaly coal common, I>>V>>L. Inertite. Dom abundant, I>V>L. Inertinite common, vitrinite sparse, liptinite rare to sparse. Pyrite sparse. Iron oxide rare.)
v2207	1113.6 SWC 41	0.49	0.40-0.61	26	Sparse cutinite, yellow to dull orange, sparse ?dinoflagellate/acritarch, yellow to orange, rare Botryococcus related telalginite, yellow to orange. (Sandstone>siltstone>>coal. Coal rare, I=V>>L. Vitrite=inertite. Dom abundant, I>L>V. INertinite common, liptinite sparse to common, vitrinite sparse. Pyrite and iron oxide sparse.)

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description Including Liptinite (Exinite) Fluorescence
v2208	1174.5 SWC 39	0.54	0.46-0.70	18	Sparse cutinite, yellow to orange, rare <u>?Botryococcus</u> related telalginite, yellow, sparse phytoplankton and liptodetrinite, yellow to orange, rare sporinite, yellow to orange. (Siltstone>sandstone>claystone. Dom common, I>L>V. Inertinite common, liptinite sparse, vitrinite rare. Sparse ?oil droplets, yellow. Iron oxide common. Pyrite sparse.)
v2209	1289.5 SWC 38	0.55	0.44-0.69	12	Sparse liptodetrinite, yellow to orange. rare to sparse sporinite, yellow to dull orange, rare cutinite, orange. (Calcareous siltstone>carbonate. Dom common, I>L>V. Inertinite common, liptinite sparse, vitrinite rare to sparse. Iron oxide sparse. Pyrite rare to sparse.)
v2210	1364.6 SWC 36	0.49	0.40-0.67	27	Major sporinite, bright yellow to orange, abundant cutinite and liptodetrinite, yellow to orange, sparse resinite, yellow to orange, rare suberinite and exsudatinite, orange to dull orange. (Claystone>shaly coal>coal. Shaly coal major, L>V>I. Clarite>vitrite. The composition of macerals; Vitrinite = 20.0% Liptinite = 79.8% Inertinite = 0.2% Coal abundant to major, L>V>I. Clarite>vitrite. The composition of macerals; Vitrinite = 40.0% Liptinite = 59.4% Inertinite = 0.6% Dom abundant, V>L>I. Vitrinite abundant, liptinite common, inertinite sparse. Pyrite sparse. Iron oxide rare.)
v2211	1414.1 SWC 34	0.45	0.39-0.54	3	Rare sporinite and liptodetrinite, orange to dull orange, rare phytoplankton and cutinite, orange. (Carbonate. Dom common, I>>L>V. Inertinite common, liptinite sparse and vitrinite rare. Rare shell fragments and other fossils. Mineral fluorescence major, green and orange. Rare bitumen, dull orange. Rare oil drops, yellow. Iron oxide and pyrite sparse.)
v2212	1461.6 SWC 32	0.58	0.41-0.68	7	Rare liptodetrinite, orange to dull orange. (Carbonate. Dom sparse, L>>I>V. All three maceral groups rare. Rare shell fragments and other fossils. Mineral fluorescence major, green and orange. Pyrite common. Iron oxide common.)

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description Including Liptinite (Exinite) Fluorescence
v2213	1504.6 SWC 31	0.47	0.42-0.52	5	Rare liptodetrinite, orange to dull orange. (Calcareous siltstone>carbonate. Don sparse, I>>V>L. Inertinite sparse, vitrinite and liptinite rare. Mineral fluorescence abundant, yellow to orange. Pyrite common. Iron oxide rare.)
v2214	1573 SWC 28	0.44	0.33-0.59	7	Sparse cutinite, phytoplankton and liptodetrinite, yellow to orange, sparse sporinite, orange, rare suberinite, dull orange. (Calcareous siltstone>> claystone>>coal>shaly coal. Coal rare, I. Inertite. Shaly coal rare, V>>L. Clarite. Dom common, L>I>>V. LIptinite and inertinite common, vitrinite rare. Rare fossil fragments. Mineral fluorescence dominant, green. Bitumen rare, dull orange. Pyrite common. Iron oxide sparse.)
v2215	1674.6 SWC 24	0.48	-	1	Rare phytoplankton and liptodetrinite, yellow to orange, rare sporinite and cutinite, orange. (Calcareous siltstone>>claystone>>shaly coal>coal. Coal rare, I. inertite. Shaly coal rare, I. Inertite. Dom common, I>L>>V. Inertinite common, liptinite sparse, vitrinite rare. Rare fossil fragments. Mineral fluorescence dominant, green. Pyrite common. Iron oxide sparse.)
v2216	1741 SWC 23	0.51	0.49-0.54	4	Rare phytoplankton, liptodetrinite and cutinite, yellow to orange, rare sporinite, orange. (Calcareous siltstone. Don common, I>L>>V. Inertinite common, liptinite sparse, vitrinite rare. Rare fossil fragments. Mineral fluorescence dominant, green. Rare bitumen, orange. Pyrite common. Iron oxide common.)
v2217	1857.6 SWC 18	0.52	0.40-0.65	5	Rare phytoplankton and liptodetrinite, orange. (Calcareous siltstone. Don common, I>>L>V. Inertinite common, liptinite and vitrinite rare. Rare fossil fragments. Mineral fluorescence dominant, green. Oil drops rare, yellow. Pyrite sparse. Iron oxide rare.)
v2218	2023.6 SWC 13	0.59	0.47-0.64	14	Rare phytoplankton and liptodetrinite, yellow to orange. (Calcareous siltstone>sandstone. Don sparse, I>>L>V. Inertinite sparse, liptinite and vitrinite rare. Rare fossil fragments. Mineral fluorescence dominant, green. Oil drops rare, yellow. Pyrite and iron oxide sparse.)
v2219	2226.6 SWC 7	0.58	0.46-0.73	27	Rare liptodetrinite and phytoplankton, yellow to orange. (Siltstone>sandstone. Dom sparse to common, I>V>>L. Inertinite and vitrinite sparse, liptinite rare. Pyrite and iron oxide sparse.)

VITRINITE REFLECTANCE WORKSHEET

WELL NAME..Mc Eachern -1..... SAMPLE NO..V.2202..... DEPTH..402.6m..... TYPE..SWC.....

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2			.82				1.18				1.54				1.90			
.11				.47	2			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	1			.85				1.21				1.57				1.93			
.14				.50	3	↓		.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27	1	↑		.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30	1			.66				1.02				1.38				1.74				2.10			
.31	2			.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33	2			.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36	1			.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37	1			.73				1.09				1.45				1.81				Exinite		Alginite	
.38	2			.74				1.10				1.46				1.82							
.39	2			.75				1.11				1.47				1.83				0.5			
.40	3			.76				1.12				1.48				1.84							
.41		FGV		.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43	1			.79				1.15				1.51				1.87				0.3		0.5	
.44	2			.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: Mc Eachern 1 SAMPLE NO: V 2203 DEPTH: 504.6m TYPE: SNC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47	1			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	2			.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51	1			.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54	1			.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26	1			.62				.98				1.34				1.70				2.06			
.27	1			.63				.99				1.35				1.71				2.07			
.28	2			.64				1.00				1.36				1.72				2.08			
.29	1			.65				1.01				1.37				1.73				2.09			
.30	3			.66				1.02				1.38				1.74				2.10			
.31	2			.67				1.03				1.39				1.75				2.11			
.32	1			.68				1.04				1.40				1.76				2.12			
.33	1			.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35	1			.71				1.07				1.43				1.79				2.15			
.36	1			.72				1.08				1.44				1.80							
.37	1			.73				1.09				1.45				1.81							
.38		FGV		.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40	1			.76				1.12				1.48				1.84							
.41	2			.77				1.13				1.49				1.85							
.42	2			.78				1.14				1.50				1.86							
.43	1			.79				1.15				1.51				1.87							
.44	1			.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.3	

Vitrinite	Inertinite
0.6	0.9

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. Mc Eachern-1 SAMPLE NO. V 2204 DEPTH 699.6 m TYPE SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2			.82				1.18				1.54				1.90			
.11				.47	1			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53	1	↓		.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32	1	↑		.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34	1			.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37	1			.73				1.09				1.45				1.81							
.38	1			.74				1.10				1.46				1.82							
.39	1			.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41	2			.77				1.13				1.49				1.85							
.42		FGV		.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87							
.44	2			.80				1.16				1.52				1.88							
.45	2			.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
... %	

Vitrinite	Inertinite
0.15	0.45

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: MC Eachern SAMPLE NO: V2205 DEPTH: 793.1 TYPE: SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	1			.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51	2			.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53	1			.89				1.25				1.61				1.97			
.18				.54	1			.90				1.26				1.62				1.98			
.19				.55	1			.91				1.27				1.63				1.99			
.20				.56	2			.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58	1			.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61	1			.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63	1	↓		.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33	1	↑		.69				1.05				1.41				1.77				2.13			
.34	4			.70				1.06				1.42				1.78				2.14			
.35	1			.71				1.07				1.43				1.79				2.15			
.36	2			.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39	1			.75				1.11				1.47				1.83				0.3			
.40	1			.76				1.12				1.48				1.84							
.41	1			.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42	1			.78				1.14				1.50				1.86							
.43	2			.79				1.15				1.51				1.87				2.3		3.1	
.44				.80				1.16				1.52				1.88							
.45	1	FGV		.81				1.17				1.53				1.89							

Keiraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: Mc Eachern-1 SAMPLE NO: V 2206 DEPTH: 10480.6 TYPE: SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2			.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50	2	FGV		.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53	1			.89				1.25				1.61				1.97			
.18				.54	2			.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56	3			.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59	1			.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61	1			.97				1.33				1.69				2.05			
.26				.62	1			.98				1.34				1.70				2.06			
.27				.63	2	↓		.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34	1	↑		.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36	2			.72				1.08				1.44				1.80							
.37	1			.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39	1			.75				1.11				1.47				1.83							
.40	1			.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43	1			.79				1.15				1.51				1.87							
.44				.80				1.16				1.52				1.88							
.45	2			.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.1	

Vitrinite	Inertinite
0.4	4.1

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: MC Eachern-1 SAMPLE NO: V 2207 DEPTH: 1113.6 m TYPE: SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2			.82				1.18				1.54				1.90			
.11				.47	2			.83				1.19				1.55				1.91			
.12				.48	1			.84				1.20				1.56				1.92			
.13				.49	4	FGV		.85				1.21				1.57				1.93			
.14				.50	1			.86				1.22				1.58				1.94			
.15				.51	1			.87				1.23				1.59				1.95			
.16				.52	2			.88				1.24				1.60				1.96			
.17				.53	3			.89				1.25				1.61				1.97			
.18				.54	1			.90				1.26				1.62				1.98			
.19				.55	1			.91				1.27				1.63				1.99			
.20				.56	1			.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61	1	↓		.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83				0.5		<0.1	
.40	2	↑		.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				0.4		1.8	
.44	2			.80				1.16				1.52				1.88							
.45	2			.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME..MC Eachern-1..... SAMPLE NO..V.2208..... DEPTH..1174.5m..... TYPE..SWC.....

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2	↑		.82				1.18				1.54				1.90			
.11				.47	2			.83				1.19				1.55				1.91			
.12				.48	1			.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50	2			.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52	2			.88				1.24				1.60				1.96			
.17				.53	1			.89				1.25				1.61				1.97			
.18				.54	1	FGV		.90				1.26				1.62				1.98			
.19				.55	2			.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59	1			.95				1.31				1.67				2.03			
.24				.60	3			.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70	1	↓		1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87							
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.4 ~~1.8~~	<0.1 ~~0.2~~

Vitrinite	Inertinite
<0.1	1.0 ~~3.0~~

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: McEachern-1 SAMPLE NO: V2209 DEPTH: 1289.5m TYPE: SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	1			.82				1.18				1.54				1.90			
.11				.47	1			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	1			.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54		FGV		.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57	1			.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62	1			.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67	1			1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69	2			1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40	1			.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43	1			.79				1.15				1.51				1.87							
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.2%	—

Vitrinite	Inertinite
0.1%	0.6%

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME: Mc Eachern-1 SAMPLE NO: V2210 DEPTH: 1364.6 M TYPE: SW C

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47	4			.83				1.19				1.55				1.91			
.12				.48	1			.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50	3			.86				1.22				1.58				1.94			
.15				.51	1			.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54		FGV		.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57	1			.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59	1			.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64	2			1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67	1			1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82				32.5%		—	
.39				.75				1.11				1.47				1.83							
.40	3			.76				1.12				1.48				1.84							
.41	1			.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42	2			.78				1.14				1.50				1.86				15 ~~40~~ %		0.7%	
.43				.79				1.15				1.51				1.87							
.44	4			.80				1.16				1.52				1.88							
.45	1			.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. MCEACHERN-1 SAMPLE NO. V2211 DEPTH. 1414.1 M TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54	1	↓		.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39	1	↑		.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43	1			.79				1.15				1.51				1.87							
.44				.80				1.16				1.52				1.88							
.45		FGV		.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.2	—

Vitrinite	Inertinite
<0.1	0.7

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. MCBACHERN-1 SAMPLE NO. V 2212 DEPTH 1461.6 M TYPE SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50	1			.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58	1	FGV		.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61	1			.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65	1			1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68	1	↓		1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83				<0.1		–	
.40				.76				1.12				1.48				1.84							
.41	1	↑		.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				<0.1		<0.1	
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME..MC Eachern-1..... SAMPLE NO..V.2213..... DEPTH.....1504.6m..... TYPE....SWC....

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46		1		.82				1.18				1.54				1.90			
.11				.47		FGV		.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	2			.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42	1			.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87							
.44	1			.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
<0.1	—

Vitrinite	Inertinite
<0.1	0.2

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. McEACHERN-1 SAMPLE NO. V2214 DEPTH. 1573.0 M TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57	1			.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59	1	↓		.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33	1	↑		.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38	1			.74				1.10				1.46				1.82							
.39	2			.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41	1			.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87							
.44		FGV		.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.8	—

Vitrinite	Inertinite
<0.1	0.6

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. MCEACHERN - 1 SAMPLE NO. V2215 DEPTH. 1674.6 TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48	1	FGV		.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83				0.2		—	
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				<0.1		0.6	
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME MCBACHERN-1 SAMPLE NO. V2216 DEPTH 1741 M TYPE SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	1	↑		.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51	2	FGV		.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53		↓		.89				1.25				1.61				1.97			
.18				.54	1			.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80							
.37				.73				1.09				1.45				1.81							
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85							
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87							
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

Organic matter Comp.(%)

Exinite	Alginite
0.2	

Vitrinite	Inertinite
<0.1	0.7

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. MCELHERN -1 SAMPLE NO. V2217 DEPTH. 1857.6 M TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47	1			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50		FGV		.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54	1			.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57				.93				1.29				1.65				2.01			
.22				.58				.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60				.96				1.32				1.68				2.04			
.25				.61				.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63				.99				1.35				1.71				2.07			
.28				.64				1.00				1.36				1.72				2.08			
.29				.65	1	↓		1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83				<0.1		-	
.40	1	↑		.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				<0.1		0.8	
.44				.80				1.16				1.52				1.88							
.45	1			.81				1.17				1.53				1.89							

Kelraville Konsultants Pty Ltd.

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. MCEACHERN-1 SAMPLE NO. V2218 DEPTH. 2023.6 M TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46				.82				1.18				1.54				1.90			
.11				.47	1			.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49				.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51	1			.87				1.23				1.59				1.95			
.16				.52				.88				1.24				1.60				1.96			
.17				.53				.89				1.25				1.61				1.97			
.18				.54				.90				1.26				1.62				1.98			
.19				.55	2			.91				1.27				1.63				1.99			
.20				.56	1			.92				1.28				1.64				2.00			
.21				.57	1			.93				1.29				1.65				2.01			
.22				.58		FGV		.94				1.30				1.66				2.02			
.23				.59				.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61	3			.97				1.33				1.69				2.05			
.26				.62	1			.98				1.34				1.70				2.06			
.27				.63	1			.99				1.35				1.71				2.07			
.28				.64	2			1.00				1.36				1.72				2.08			
.29				.65				1.01				1.37				1.73				2.09			
.30				.66				1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71				1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73				1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83				<0.1		—	
.40				.76				1.12				1.48				1.84							
.41				.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				<0.1		0.4	
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

VITRINITE REFLECTANCE WORKSHEET

WELL NAME. Mt Eaglehawk-1 SAMPLE NO. V2219 DEPTH. 2226.6m TYPE. SWC

FGV = First Generation Vitrinite I = Inertinite

Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	NO. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type	Ro %	No. Read	Pop Rnge	Pop Type
.10				.46	2			.82				1.18				1.54				1.90			
.11				.47				.83				1.19				1.55				1.91			
.12				.48				.84				1.20				1.56				1.92			
.13				.49	1			.85				1.21				1.57				1.93			
.14				.50				.86				1.22				1.58				1.94			
.15				.51				.87				1.23				1.59				1.95			
.16				.52	1			.88				1.24				1.60				1.96			
.17				.53	4			.89				1.25				1.61				1.97			
.18				.54	4			.90				1.26				1.62				1.98			
.19				.55				.91				1.27				1.63				1.99			
.20				.56				.92				1.28				1.64				2.00			
.21				.57	2			.93				1.29				1.65				2.01			
.22				.58		FGV		.94				1.30				1.66				2.02			
.23				.59	1			.95				1.31				1.67				2.03			
.24				.60	1			.96				1.32				1.68				2.04			
.25				.61	1			.97				1.33				1.69				2.05			
.26				.62				.98				1.34				1.70				2.06			
.27				.63	1			.99				1.35				1.71				2.07			
.28				.64	2			1.00				1.36				1.72				2.08			
.29				.65	1			1.01				1.37				1.73				2.09			
.30				.66	4			1.02				1.38				1.74				2.10			
.31				.67				1.03				1.39				1.75				2.11			
.32				.68				1.04				1.40				1.76				2.12			
.33				.69				1.05				1.41				1.77				2.13			
.34				.70				1.06				1.42				1.78				2.14			
.35				.71	1			1.07				1.43				1.79				2.15			
.36				.72				1.08				1.44				1.80				Organic matter Comp.(%)			
.37				.73	1	↓		1.09				1.45				1.81				Exinite		Alginite	
.38				.74				1.10				1.46				1.82							
.39				.75				1.11				1.47				1.83							
.40				.76				1.12				1.48				1.84				≥20:1			
.41				.77				1.13				1.49				1.85				Vitrinite		Inertinite	
.42				.78				1.14				1.50				1.86							
.43				.79				1.15				1.51				1.87				0.2		0.3	
.44				.80				1.16				1.52				1.88							
.45				.81				1.17				1.53				1.89							

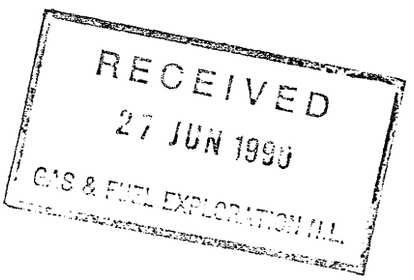
Kelraville Konsultants Pty Ltd.

10. Source Rock Analysis

P2813

AMDEL CORE SERVICES

25 June 1990



Gas & Fuel Exploration NL
GPO Box 1841Q
MELBOURNE VIC 3001

Attention: Val Akbari

REPORT: 009/304

CLIENT REFERENCE:	Letter V Akbari
MATERIAL:	Cuttings Samples
LOCALITY:	McEachern -1
WORK REQUIRED:	TOC and Rock-Eval Analyses

Please direct technical enquiries regarding this work to the signatory below under whose supervision the work was carried out.

BRIAN L WATSON
Petroleum Geochemistry Supervisor
on behalf of Amdel Core Services Pty Ltd

1. INTRODUCTION

Total organic carbon (TOC) and Rock-Eval analyses were carried out on seven cuttings samples from McEachern -1. This report contains the results of these analyses along with brief details of the analytical procedures used, graphical displays of the data and some preliminary interpretative comments.

2. ANALYTICAL PROCEDURE

2.1 Sample Preparation

Cuttings samples (as received) were ground in a Siebtechnik mill for 20-30 seconds.

2.2 Total Organic Carbon (TOC)

Total organic carbon was determined by digestion of a known weight (approximately 0.2 g) of powdered rock in 50% HCl to remove carbonates, followed by combustion in oxygen and measurement of the resultant CO_2 by infra-red detection.

2.3 Rock-Eval Analyses

A 100 mg portion of powdered rock was analysed by the Rock-Eval pyrolysis technique (Girdel IFP-Fina Mark 2 instrument; operating mode, Cycle 1).

3. RESULTS

TOC and Rock-Eval data for McEachern -1 are listed in Table 1. Figure 1 is a cross plot of Tmax versus Hydrogen Index illustrating kerogen Type and maturity for each of the samples examined.

4. PRELIMINARY INTERPRETATION

4.1 Maturity

Rock-Eval Tmax values are very consistent over the interval studied and indicate that these sediments are marginally mature for the generation of hydrocarbons (Tmax = 439 - 442°C, VR = 0.6 - 0.7%, Table 1, Figure 1).

Production indices increase slightly with depth and suggest that migrated hydrocarbons are absent from the interval studied.

4.2 Organic and Source Richness

Organic richness is, for the most part, fair in these cuttings (TOC = 1.10 - 1.18%). However, cuttings from 2355 metres depth contain slightly less organic matter (TOC = 0.75%) and have poor organic richness.

Source richness for the generation of hydrocarbons uniformly poor ($S_1 + S_2$ = 1.08 - 1.82 kg of hydrocarbons/tonne) in most samples but is fair in the cuttings sample from 2384 metres depth ($S_1 + S_2$ = 2.33 kg of hydrocarbons/tonne).

4.3 Kerogen Type and Source Quality

Hydrogen Index and Tmax values indicate that the samples examined have the bulk composition of Type III kerogen (Figure 1).

AMDEL CORE SERVICES

Rock-Eval Pyrolysis 15/06/90

Client: GAS AND FUEL EXPLORATION N/L

Well: McEACHERN-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
2355	441	0.14	0.94	0.89	1.08	0.13	1.05	0.09	0.75	125	118
2360	441	0.25	1.54	1.27	1.79	0.14	1.21	0.14	1.11	138	114
2365	441	0.25	1.54	1.06	1.79	0.14	1.45	0.14	1.10	140	96
2370	441	0.22	1.47	0.99	1.69	0.13	1.48	0.14	1.14	128	86
2375	441	0.26	1.56	1.08	1.82	0.14	1.44	0.15	1.10	141	98
2380	442	0.25	1.46	1.13	1.71	0.15	1.29	0.14	1.11	131	101
2384	439	0.41	1.92	1.00	2.33	0.18	1.92	0.19	1.18	162	84

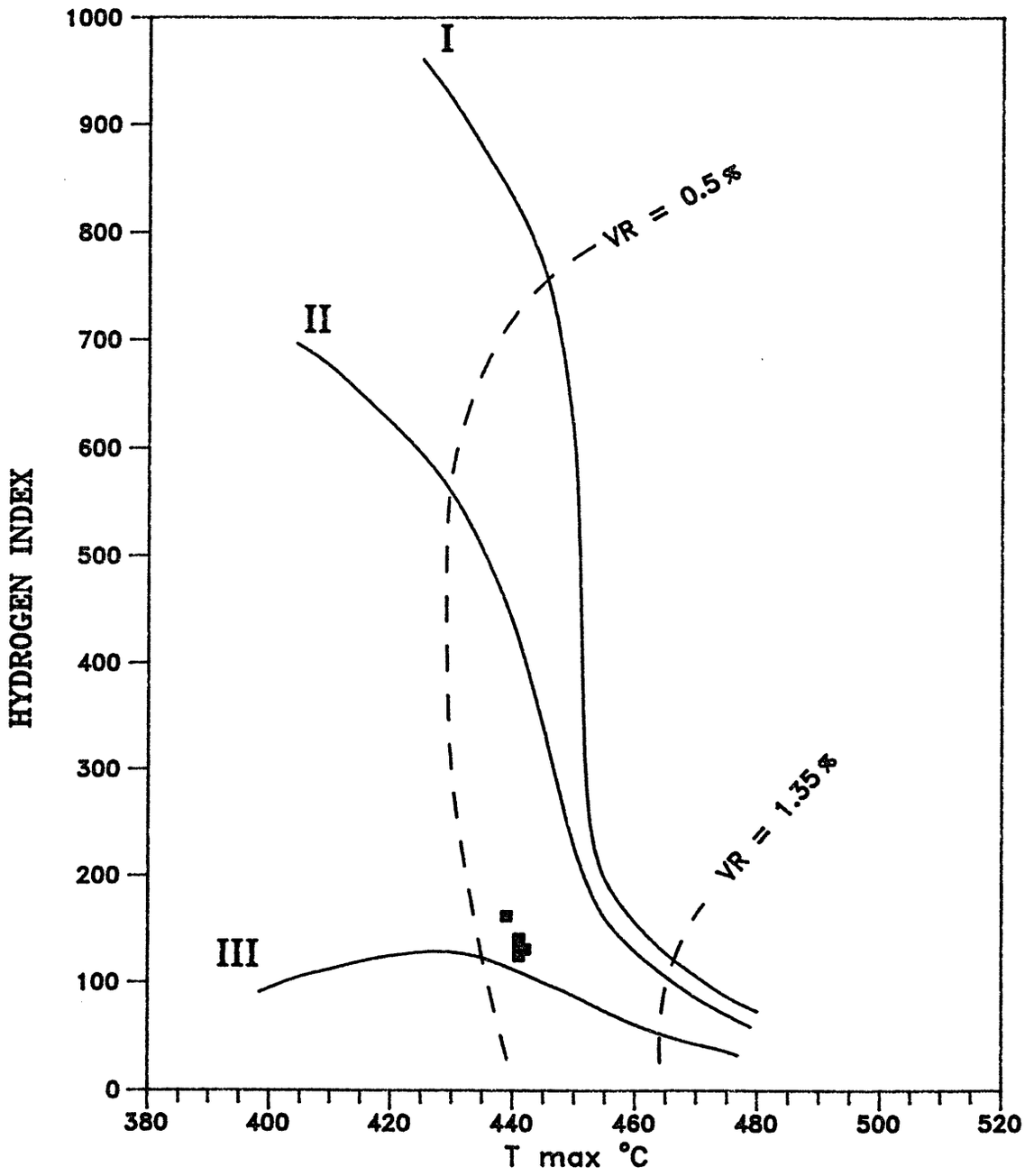
KEY TO ROCK-EVAL PYROLYSIS DATA SHEET

	PARAMETER	SPECIFICITY
T max	position of S_2 peak in temperature program (^oC)	Maturity/Kerogen type
S_1	kg hydrocarbons (extractable)/tonne rock	Kerogen type/Maturity/Migrated oil
S_2	kg hydrocarbons (kerogen pyrolysate)/tonne rock	Kerogen type/Maturity
S_3	kg CO_2 (organic)/tonne rock	Kerogen type/Maturity *
$S_1 + S_2$	Potential Yield	Organic richness/Kerogen type
PI	Production Index ($S_1/S_1 + S_2$)	Maturity/Migrated Oil
PC	Pyrolysable Carbon (wt. percent)	Organic richness/Kerogen type/Maturity
TOC	Total Organic Carbon (wt. percent)	Organic richness
HI	Hydrogen Index (mg h'c (S_2)/g TOC)	Kerogen type/Maturity
OI	Oxygen Index (mg CO_2(S_3)/g TOC)	Kerogen type/Maturity *

*Also subject to interference by CO_2 from decomposition of carbonate minerals.

HYDROGEN INDEX vs T max

Company : GAS AND FUEL EXPLORATION N/L
Location: McEACHERN-1



P941

AMDEL
CORE
SERVICES

9 March 1990

Gas and Fuel Exploration NL
GPO Box 1841Q
MELBOURNE VIC 3001

Attention: V Akbari

REPORT: 009/171

CLIENT REFERENCE: -

MATERIAL: Sidewall Core Samples

LOCALITY: McEachern -1

WORK REQUIRED: Source Rock Analysis

Please direct technical enquiries regarding this work to Brian L Watson (Adelaide) under whose supervision the work was carried out.

Dr Brian G Steveson
Manager Australasia
on behalf of Amdel Core Services Pty Ltd

Please reply to: PO Box 109 Eastwood SA 5063 Ph: (08)372 2834

Amdel Core Services Pty Limited
Incorporated in South Australia

1. INTRODUCTION

Fourteen sidewall core samples from McEachern -1 were received for TOC and Rock-Eval pyrolysis. This report is a formal presentation of the results of this study. Petrology and XRD results will be presented in a subsequent report.

2. ANALYTICAL PROCEDURE

2.1 Sample Preparation

Cuttings samples (as received) were ground in a Siebtechnik mill for 20-30 seconds.

2.2 Total Organic Carbon (TOC)

Total organic carbon was determined by digestion of a known weight (approximately 0.2 g) of powdered rock in 50% HCl to remove carbonates, followed by combustion in oxygen and measurement of the resultant CO_2 by infra-red detection.

2.3 Rock-Eval Analyses

A 100 mg portion of powdered rock was analysed by the Rock-Eval pyrolysis technique (Girdel IFP-Fina Mark 2 instrument; operating mode, Cycle 1).

3. RESULTS

TOC and Rock-Eval data are presented in Table 1. Figure 1 is a plot of Hydrogen Index versus Tmax illustrating kerogen Type and maturity.

4. INTERPRETATION

4.1 Maturity

Hydrogen Index and Tmax values indicate that the sediments examined from the McEachern -1 location are marginally mature (VR = 0.55-0.7%).

Production indicies although maturation dependent are also sensitive to the presence of migrated hydrocarbons. High production indices indicate the presence of migrated hydrocarbons in the following samples: 1414.1 and 1461.4 metres depth. Elevated production indices in the sidewall core samples from 1174.5, 1504.6 and 1857.6 metres depth are unreliable due to the small size of the S_1 and S_2 peaks in these samples.

4.2 Organic Richness and Source Richness

Organic richness is commonly poor in the samples studied (TOC <1%). However samples from 905.6, 1365.0 and 1649.1 have TOC values which are indicative of fair to excellent organic richness (TOC = 1.06 - 14.60%).

Source richness for the generation of hydrocarbons is generally similarly poor ($S_1 + S_2$ <2 kg hydrocarbons/tonne). However, samples from 905.6, 1365.0, 1414.1 and 1649.1 metres depth have $S_1 + S_2$ values, indication of fair to excellent source richness ($S_1 + S_2$ = 2.11-11.21 kg of hydrocarbons/tonne).

4.3 Kerogen Type

Hydrogen Index and Tmax values indicate that the majority of the samples examined contain organic matter with the bulk composition of Type III to Type IV kerogen. Sidewall cores containing better quality Type II-III kerogen occur at 905.6, 1414.1 and 1649.1 metres depth.

TABLE 1

ANDEL CORE SERVICES

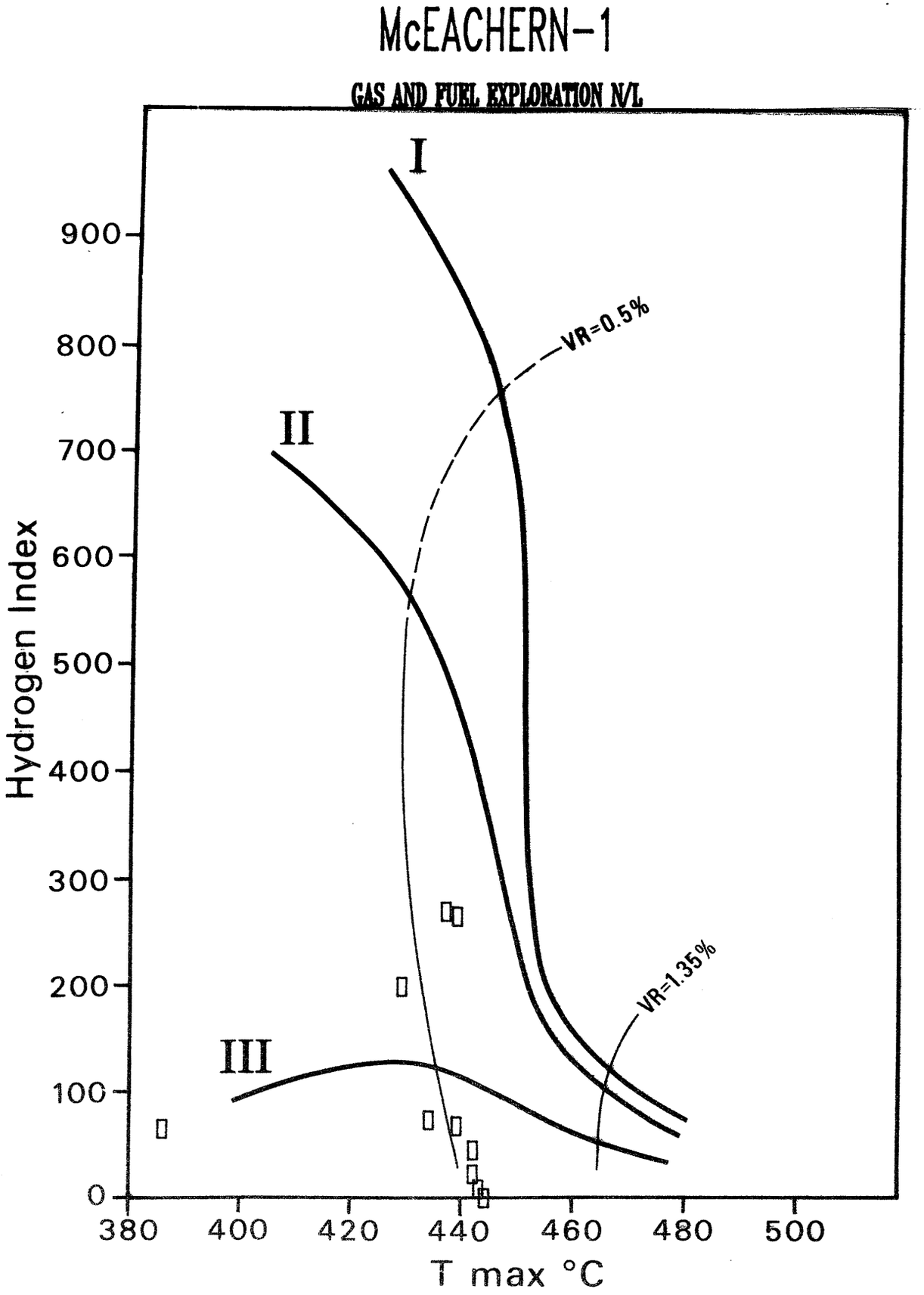
Rock-Eval Pyrolysis 02/03/90

Client: GAS AND FUEL EXPLORATION N/L

Well: McEACHERN-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
504.6	443	0.01	0.05	0.02	0.06	0.17	2.51	0.00	0.58	9	3
699.6									0.26		
905.6	437	0.09	2.85	0.44	2.94	0.03	6.47	0.24	1.06	269	42
1048.6									0.32		
1174.5	442	0.05	0.12	0.40	0.17	0.31	0.30	0.01	0.53	23	75
1289.5	386	0.07	0.39	0.51	0.46	0.15	0.76	0.03	0.60	65	85
1365.0	434	0.45	10.76	0.20	11.21	0.04	53.80	0.93	14.60	74	1
1414.1	429	0.48	1.63	0.00	2.11	0.23	0.00	0.17	0.82	199	0
1461.6	339	0.07	0.25	8.29	0.32	0.22	0.03	0.02	0.38	66	2182
1504.6	271	0.04	0.07	2.17	0.11	0.40	0.03	0.00	0.35	20	620
1523.6	439	0.05	0.63	0.25	0.68	0.07	2.52	0.05	0.93	68	27
1649.1	439	0.18	3.65	0.54	3.83	0.05	6.75	0.31	1.38	264	39
1857.6	444	0.05	0.00	0.39	0.05	1.00	0.00	0.00	0.48	0	81
1946.1	442	0.04	0.26	0.56	0.30	0.13	0.46	0.02	0.58	45	97

FIGURE 1


McEACHERN-1
GAS AND FUEL EXPLORATION N/L
I
II
III
VR=0.5%
VR=1.35%
Hydrogen Index
900
800
700
600
500
400
300
200
100
0
380
400
420
440
460
480
500
T max °C