



COAL BED METHANE ANALYSIS FINAL REPORT
of
FINGAL-41B
for
PURE ENERGY RESOURCES LIMITED
by
ACS LABORATORIES PTY LTD



27th November, 2007

Pure Energy Resources Limited
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Attention: Steve Beardsall

COAL BED METHANE ANALYSIS - FINAL REPORT 1023-06

FINGAL-41B

Please find enclosed final results of the coal bed methane study for the samples taken from the above well.

If ACS can assist you in any way, or if you require any further information, please do not hesitate to contact the undersigned.

GREGORY COCHRANE
Supervisor – Field & Coal Bed Methane Services

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SUMMARY

This report outlines the methods and results of gas desorption testing and associated coal property analyses performed on coal seams located within the Fingal Coal Fields intersected during exploration drilling by Pure Energy Resources Limited in SEL 32 / 2003, Tasmania undertaken in May, 2007.

ACS Laboratories Pty Ltd was contracted by Pure Energy Resources Limited to provide a mobile field laboratory and field personnel to recover HQ3 core samples, provide core handling and conduct reservoir temperature desorption testing as per the Australian Standard, AS 3980. Further analysis was to take place at the ACS Brisbane based laboratory. The methodology adopted for all sampling and testing is detailed in Chapter 1. The modified gas content data and results of all associated gas and core analyses are presented in a series of tables and graphs in the Chapter 2.

The Fingal-41B well was part of an appraisal program for coal bed methane and was cored from a depth of 266.90m to a total depth of 464.50m. All of the recovered coal was placed into desorption canisters and monitored for the determination of gas content. Subsequent to the desorption program, the coal material was slabbed. Sub-samples were then removed from one half of the core for residual gas, proximate, maceral and adsorption isotherm analyses.

The recovery of the core was generally good with the core being relatively consolidated over most of the coal intervals. The samples however were widely inconsistent with respect to coal content. Some samples consisted mainly of coal; others contained alternating coal and carbonaceous shale bands, while some samples contained significant amounts of non-carbonaceous material (tuffs and shale). The coal was dull with moderate banding, poorly developed cleating which in most instances was filled with calcite.

As received, total gas contents of the seams averaged;

Seam A	– 0.12 scc/g (m ³ /t)
Mid A-B	– 0.06 scc/g (m ³ /t)
Seam B	– 0.07 scc/g (m ³ /t)
Seam C	0.08 scc/g (m ³ /t)
Seam D	– 0.08 scc/g (m ³ /t)
Seam F	– 0.07 scc/g (m ³ /t)
Seam G	0.08 scc/g (m ³ /t)

Dry and ash free gas contents of the seams averaged;

Seam A	– 0.32 scc/g (m ³ /t)
Mid A-B	– 0.16 scc/g (m ³ /t)
Seam B	– 0.12 scc/g (m ³ /t)
Seam C	0.15 scc/g (m ³ /t)
Seam D	– 0.15 scc/g (m ³ /t)
Seam F	– 0.12 scc/g (m ³ /t)
Seam G	0.15 scc/g (m ³ /t)

The results were of good quality with no sign of canister leakage during the desorption testing.

The coals have high ash contents though the results are skewed by the presence of non-coal material and carbonaceous shales. Given that it is generally accepted that non-coal material does not contribute significantly to the overall gas content of a given coal seam, it was necessary for comparative purposes to normalise the gas content data to a dry, ash-free (DAF) basis.

The composition of the desorbed gases could not be determined due to a lack of sample.

The sorption time, or desorption coefficient, of the coal samples corresponds to the time taken to desorb 63% of the total desorbable gas volume. This measure is used as an independent estimate of the gas diffusion constants for coals. A number of factors can affect the rate of diffusion such as maceral type and the recovery / level of consolidation of the core. In this instance the latter was consistent across all seams. The main influence on the coefficients of diffusion is from permeability in a distressed state i.e. a direct reflection of cleat development and fracturing (permeability). Taking into account lost gas and desorbed gas ($Q_1 + Q_2$), the sorption time of the coals is considered to be very low but with such low gas contents it is difficult to make any meaningful interpretation of these numbers.

The maceral analysis indicates that the samples contain high amounts of semifusinite from the inertinite group as well as minor liptinite. Some of the samples also contain high amounts of telocollinite from the vitrinite group. The presence of these higher rank coals is thought to be caused by the presence of a nearby igneous intrusion which may have caused the coals to become heat affected. The minerals contained are mainly shale or carbonaceous shale with much disseminated clay and trace amounts of pyrite, carbonate and quartz.

A drill stem test (DST) over the relevant coal seams recovered no gas indicating that the coals are under-saturated with respect to gas at this location. The results of the adsorption isotherm confirm this.

The slabbed core is being stored in ACS Brisbane's core facility pending delivery of the core to Pure Energy Resources Limited.

GAS CONTENT RESULTS SUMMARY

Client: Pure Energy Resources limited
Well: Fingal-41B

Sample #	Seam	Top Depth (m)	As Received Q1		As Received Q2		As Received Q3		As Received Q1 + Q2	As Received Total	DAF Q1		DAF Q2		DAF Q3		DAF Q1 + Q2	DAF Total	Sorptions Time, Days (63%)	
			%	%	%	%	%	%			%	%	%	%	Q2	(Q1+Q2)				
1	A	281.75	0.02	17	0.05	42	0.05	42	0.07	0.12	0.04	13	0.12	38	0.16	50	0.12	0.32	0.1	<0.1
2	Mid A-B	297.07	0.00	0	0.05	83	0.01	17	0.05	0.06	0.00	0	0.13	81	0.03	19	0.13	0.16	0.1	0.1
3	B	304.40	0.00	0	0.04	80	0.01	20	0.04	0.05	0.00	0	0.07	78	0.02	22	0.07	0.09	<0.1	<0.1
4	B	305.40	0.00	0	0.03	38	0.05	63	0.03	0.08	0.00	0	0.05	36	0.09	64	0.05	0.14	<0.1	<0.1
5	C	328.10	0.00	0	0.07	64	0.04	36	0.07	0.11	0.00	0	0.13	62	0.08	38	0.13	0.21	0.3	0.3
6	C	329.80	0.00	0	0.02	40	0.03	60	0.02	0.05	0.00	0	0.03	38	0.05	63	0.03	0.08	<0.1	<0.1
7	D	355.70	0.03	21	0.09	64	0.02	14	0.12	0.14	0.06	19	0.21	68	0.04	13	0.27	0.31	<0.1	<0.1
8	D	356.50	0.00	0	0.07	88	0.01	13	0.07	0.08	0.00	0	0.08	89	0.01	11	0.08	0.09	<0.1	<0.1
9	D	363.40	0.00	0	0.02	67	0.01	33	0.02	0.03	0.00	0	0.03	60	0.02	40	0.03	0.05	<0.1	<0.1
10	F	405.00	0.00	0	0.03	38	0.05	63	0.03	0.08	0.01	7	0.05	36	0.08	57	0.06	0.14	<0.1	<0.1
11	F	406.80	0.00	0	0.03	60	0.02	40	0.03	0.05	0.00	0	0.06	60	0.04	40	0.06	0.10	<0.1	<0.1
12	G	453.64	0.00	0	0.05	63	0.03	38	0.05	0.08	0.00	0	0.10	59	0.07	41	0.10	0.17	<0.1	<0.1
13	G	462.58	0.01	13	0.03	38	0.04	50	0.04	0.08	0.01	8	0.05	38	0.07	54	0.06	0.13	<0.1	<0.1
Averages	Seam	Top Depth (m)	As Received Q1	%	As Received Q2	%	As Received Q3	%	As Received Q1 + Q2	As Received Total	DAF Q1	%	DAF Q2	%	DAF Q3	%	DAF Q1 + Q2	DAF Total	Q2	(Q1+Q2)
1	A	281.75	0.02	17	0.05	42	0.05	42	0.07	0.12	0.04	13	0.12	38	0.16	50	0.16	0.32	0.10	<0.1
2	Mid A-B	297.07	0.00	0	0.05	83	0.01	17	0.05	0.06	0.00	0	0.13	81	0.03	19	0.13	0.16	0.10	0.10
3,4	B	305.40	0.00	0	0.04	54	0.03	46	0.04	0.07	0.00	0	0.06	52	0.06	48	0.06	0.12	<0.1	<0.1
5,6	C	329.45	0.00	0	0.05	56	0.04	44	0.05	0.08	0.00	0	0.08	55	0.07	45	0.08	0.15	0.15	0.15
7,8,9	D	360.05	0.01	12	0.06	72	0.01	16	0.07	0.08	0.02	13	0.11	71	0.02	16	0.13	0.15	<0.1	<0.1
10,11	F	406.40	0.00	0	0.03	46	0.04	54	0.03	0.07	0.01	4	0.06	46	0.06	50	0.06	0.12	<0.1	<0.1
12,13	G	458.61	0.01	6	0.04	50	0.04	44	0.05	0.08	0.01	3	0.08	50	0.07	47	0.08	0.15	<0.1	<0.1

PROXIMATE ANALYSIS RESULTS SUMMARY

Client: Pure Energy Resources Limited

Well: Fingal-41B

Cannister #	Seam	Top Depth (m)	Ash	Moisture	Volatile Matter	Fixed Carbon
1	A	281.75	52.9	4.3	7.5	35.3
2	Mid A-B	297.07	57.8	4.7	17.1	20.4
3	B	304.40	32.9	4.6	21.9	40.6
4	B	305.40	40.8	3.9	23.4	31.9
5	C	328.10	44.2	5.2	19.0	31.6
6	C	329.80	37.2	5.2	21.5	36.2
7	D	355.70	47.3	8.0	17.9	26.8
8	D	356.50	16.0	3.9	28.4	51.7
9	D	363.40	44.4	4.8	20.0	30.8
10	F	405.00	31.9	5.4	23.9	38.8
11	F	406.80	41.1	4.3	23.3	31.3
12	G	453.64	48.6	6.8	15.3	29.3
13	G	462.58	39.4	5.8	17.4	37.4
Averages	Seam	Top Depth (m)	Ash	Moisture	Volatile Matter	Fixed Carbon
1	A	281.75	52.90	4.30	7.50	35.30
2	Mid A-B	297.07	57.80	4.70	17.10	20.40
3,4	B	305.40	36.85	4.25	22.65	36.25
5,6	C	329.45	40.70	5.20	20.23	33.88
7,8,9	D	360.05	35.90	5.57	22.10	36.43
10,11	F	406.40	36.50	4.85	23.60	35.05
12,13	G	458.61	44.00	6.30	16.35	33.35

CHAPTER 1

DESCRIPTION OF EXPERIMENTS

1. DESCRIPTION OF EXPERIMENTS

1.1 Gas Content by Seam Temperature Desorption

The gas desorption canisters that were used throughout the program were constructed of stainless steel or powder coated aluminium and designed to accommodate fully recovered HQ3 sized cores in a range of half or full metre lengths. The dead space above the sample, in the case of a partial recovery, was taken up by non porous rubber billets. The canisters were sealed by an 'O'-ring gasket and 'Camlock' lid, and came complete with an outlet valve, safety release valve, and pressure gauge rated to 1000 KPa.

Before transferral of canisters to the well site, each was accurately weighed and correctly labelled. The canisters were individually pressurised with compressed air to 400 KPa and monitored for any leakage prior to use. Following the pressure test, a vacuum was pulled on each canister and the canisters monitored for any air intake prior to use.

The principal field desorption apparatus was comprised of inverted measuring cylinders, associated fittings, and displacement baths containing an acidified solution incorporating 1% NaCl (by weight), 0.5% HCl (by volume) and a colouring additive (methyl red). Measuring cylinders for use in the mobile on-site laboratory were constructed of clear plastic with a maximum capacity of 2000 cubic centimetres. Each cylinder was supplied with two tap valves and associated clear plastic tubing that connected to the gas canisters and an electric vacuum pump respectively.

The water baths were constructed of standard 240 mm diameter PVC piping and end caps, and attached to an aluminium frame that supported the measuring cylinders. The measuring cylinders were arranged so that when the bath was filled with fluid, the open base was submerged approximately 2-4 cm below the height of water in the bath.

Digital thermometers (0.5°C accuracy) and calibrated barometers (0.5 KPa accuracy) were used throughout to monitor ambient atmospheric conditions at each recording point. Electronic 'stop watches' were utilised for the accurate timing of volume readings, and all weights were measured to an accuracy of 0.01 g using digital balances.

On recovery at surface, the cores were quickly washed, marked for orientation and depth and classified to enable desorption monitoring as detailed below. In order to assess the desorbable gas content of the coal seams encountered during drilling, all coal material was analysed. The sampling depths of the cores were derived from the continuous core depth record. This was maintained by means of the 'CBM Core Sampling Timesheet' which consisted of core numbers, driller's depths, core depths, and times that the core was penetrated, left bottom and reached surface (Chapter 6).

The procedure used throughout for gas desorption monitoring followed that outlined in the Australian Standard for the determination of desorbable gas content of coal seams - Direct method (AS 3980-1999). In summary, this procedure incorporated the following systematic steps.

Coring pre-determined depth intervals was carried out by means of a wire line retrievable, HQ3 (61.1mm), triple tube core barrels. The start time at which each core was penetrated, the time at which the core left bottom (t_b - time core retrieved), and the time at which the core arrived at surface (t_s - time at surface) were recorded. Time zero, or commencement of desorption for lost gas calculations, was taken as t_b where the coals were saturated with respect to gas, and as $t_b-t_s/2$ where coals were under-saturated with respect to gas. Once the inner tube reached the surface, the drilling crew laid it out on the core table and pumped the slips (containing the core) out. The core was then quickly cleaned, orientated and any potential coal or carbonaceous shale identified. The samples were immediately placed in desorption canisters and weighed prior to being placed in seam temperature baths for gas content testing. The temperature used for the testing was taken from the mud returns. Upon connection of the canister to the desorption apparatus 'time on test' was recorded, and desorbed gas volumes read at the following intervals (subject to ongoing operations):

- Every 1 minute for 30 minutes
- Every 5 minutes for 1 hour
- Every 15 minutes for 1 hour
- Every 30 minutes for 4 hours
- Every 1 hour for 4 hours

After this schedule the readings were extended to a wider frequency, generally in the range of 6-24 hours, dependent on the volumes produced. At each reading, the following information was recorded on specifically designed data sheets, and subsequently entered into the computer:

- 1) Progressive volume of gas in the measuring cylinder
- 2) Water column height
- 3) Bath water height
- 4) Ambient temperature
- 5) Ambient atmospheric pressure
- 6) Reset value (where appropriate)

Data acquisition continued until desorption had reached equilibrium or flat lined i.e. no additional desorbed gas for five days. The coal was then carefully removed and slabbed with one half of the core used for the determination of residual gas content and proximate analysis.

The procedure adopted for residual gas analysis involved the weighing of a sub-sample to an accuracy of 0.01 g, with the optimal weight being in the range 15-300 g. The sample was initially broken in a hermetically sealed blender and subsequently crushed in a hermetically sealed ball mill to less than 212 μm particle size. The gas volume released by this process was measured by the direct water displacement method and a volume, per unit mass of coal, calculated at standard temperature and pressure conditions.

1.2 Proximate Analysis

A representative sub-sample of coal was removed from each desorption canister for proximate analysis. This sampling strategy was designed to:

- a) Calculate gas contents on a DAF basis for comparison purposes
- b) Determine the factors controlling variations in in-situ gas contents within a given seam

Every attempt was made to exclude all non-coal material from proximate analysis sampling, on the basis that these rocks did not contribute to the overall gas content of the coal seam in question.

The testing procedure adopted throughout for proximate analysis conformed to the appropriate Australian Standard for coal analysis and testing (AS 1038.3-1989). In summary, this procedure involved the drying of a known mass of coal in an oxygen-free (nitrogen flush) oven at 105-110°C for a period of between 1.5 to 3 hours. After removal from the oven, and subsequent to the sample being placed in a desiccator, the coal was weighed, and the loss of mass ascribed to inherent moisture.

The sample was then heated in a cylindrical silica crucible in a muffle furnace at 900°C for seven minutes. The loss of mass recorded during this process equated to the proportion of volatile matter present in the sample. Determination of ash content was achieved by combusting the coal until a constant mass was attained. This was achieved by heating the sample to 500°C for 30 minutes before increasing the temperature to 815°C, until combustion was complete. The percentage of ash was calculated from the mass of the residue remaining after incineration. The amount of fixed carbon was not determined directly, but represented the difference between the sum of all other components.

1.3 Dry and Ash Free Normalisation of Gas Content

As it is generally accepted that non-coal material does not contribute significantly to the overall gas content of a given coal seam, it was necessary for comparative purposes to normalise the gas content data to a dry, ash-free (DAF) basis. This was achieved by using the following equation:

$$DAF \text{ Gas Content} = \frac{\text{gas volume (scc / g)}}{\text{core wt (g)} - \left(\text{core wt} \times \left(\frac{\text{ash (\%)} + \text{moisture (\%)}}{100} \right) \right)}$$

This equation was applied to the lost gas, desorbed gas, and residual gas components so that comparisons could be made between all the data gathered during the exploration program.

Whilst every attempt was made to remove non-coal partings from samples prior to weighing and preparation for proximate analysis, it was not always possible to isolate fine material. Consequently, the corresponding DAF gas content results may be artificially high.

1.4 Calculation of Desorption Coefficient

The sorption time, or desorption coefficient, of a coal sample corresponds to the time taken to desorb 63% of the total desorbable gas volume (Q2). This measure is used as an independent estimate of the gas diffusion constant for a given coal (see Close & Erwin 1989). Two methods for calculating sorption time are widely used in the literature, namely the sorption time method outlined by Close & Erwin (1989) and the more recently adopted GRI or modified sorption time method.

The sorption time method, as outlined by Close & Erwin (1989), was calculated using the following formulae:

$$V_{63\%} = Q2 \times 0.63$$

$$\text{Sorption time} = TCS_{lbl} + (TCS_{ubl} - TCS_{lbl}) \times \frac{V_{63\%} - CDV_{lbl}}{CDV_{ubl} - CDV_{lbl}}$$

where:

TCS_{lbl} = time core sealed (lower bounding limit)

TCS_{ubl} = time core sealed (upper bounding limit)

CDV_{lbl} = cumulative desorbed volume (lower bounding limit)

CDV_{ubl} = cumulative desorbed volume (upper bounding limit)

The modified sorption time method is identical in approach to that outlined above, with the only difference being that this method incorporates the estimated lost gas volume into the cumulative desorbed volume and uses time zero (i.e. the commencement of desorption for lost gas calculations) as the starting point for elapsed time.

$$V_{63\%} = (Q1 + Q2) \times 0.63$$

By incorporating the lost gas into the equation, this method is considered to be a more reliable indicator of the desorption behaviour of a given coal.

1.5 Adsorption Isotherm

Coal sorption isotherms represent the relationship between gas storage capacity of a given coal sample and pressure, and are used to predict the maximum volume of gas that will be released from a coal seam as the reservoir pressure declines during long-term production (Mavor et al. 1990). When compared with measured gas contents and reservoir pressure, the sorption isotherm data also provides a guide as to the relative gas saturation of the coal and the bottom-hole pressure required to initiate significant methane desorption (critical desorption pressure).

A sub-sample of coal was selected by the client. Prior to the adsorption isotherm analysis, a slabbed section of the coal was crushed to less than 250 µm particle size and thoroughly mixed into a heterogeneous blend before sub-dividing a sub-sample for proximate analysis. Crushing the coal increased the surface area and accelerated the adsorption process.

Due to the influence of moisture on the sorptive capacity of coal (Joubert et al. 1973), the equilibrium moisture content of the remaining sample was then determined by a standardised procedure that involved placing the pre-weighed sample in a desiccator over a saturated solution of K_2SO_4 until an equilibrium weight was attained. Once completed, the sample was placed in a test cell maintained at a temperature equivalent to the measured reservoir temperature, and pure methane was introduced into the system. As the test cell pressure was progressively increased, the amount of gas adsorbed was monitored and the results recorded.

This data was then interpreted by using the equation originally developed by Langmuir (1918) that describes the relationship between the gas storage capacity of coal and pressure. The equation is expressed as follows:

$$g = V_L (1 - a_d) \frac{P}{P + P_L}$$

Where g = gas storage capacity (scc/g), V_L = Langmuir Volume (scc/g), a_d = ash fraction (dry basis), P = pressure (MPa), and P_L = Langmuir pressure (MPa).

The Langmuir pressure and Langmuir volume are estimated by fitting the data to the following linearised equation.

$$\frac{P}{g} = a_0 + a_1 P$$

The Langmuir coefficients can then be derived from the intercept a_0 and the slope of the line a_1 , based on the following linear regression relationships.

$$V_L = \frac{1}{a_1 (1 - a_d)}$$

$$P_L = a_0 V_L (1 - a_d)$$

To determine the critical desorption pressure (P_c) for a known gas content, the following relationship can be used.

$$P_c = \frac{P_L g_c}{V_L (1 - a_d) - g_c}$$

Where P_L = Langmuir pressure, V_L = Langmuir volume, a_d = the ash fraction (dry basis), and g_c = the DAF total gas content of the sample, including residual gas content (i.e. Q1 + Q2 + Q3).

The gas saturation level (g_s) of a given coal was calculated as follows:

$$g_s = \frac{g_c \times 100}{\left(\frac{P_{Res} \times V_L}{P_{Res} + P_L} \right)}$$

It is generally agreed that the gas storage capacity of coal is a function of rank, temperature, the moisture content of the coal matrix, and pressure (Mavor et al. 1990, Hawkins et al. 1992). As coal rank can be assumed to be consistent vertically within a single seam, and the temperature used for adsorption experimentation is equivalent to reservoir temperature, the variable most likely to influence the determination of Langmuir constants is the moisture content of the sample. In order to approximate reservoir conditions, the equilibrium moisture procedure was adopted for this sample, and with all other variables remaining constant, the adsorption parameters measured should characterise the coal of interest.

1.6 Maceral Analysis

Sub-samples of coal were selected by the client for maceral analyses. The coal samples were crushed, sub-sampled and prepared as grain mounts.

CHAPTER 2

GAS DESORPTION RESULTS

ACS Laboratories Pty Ltd

GAS DESORPTION DATA SUMMARY

Fingal 41B

1

Seam A

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 1
 SEAM NAME Seam A
 DEPTH FROM (m) 281.75
 DEPTH TO (m) 282.25
 THICKNESS (m) 0.5
 COAL LENGTH (m) 0.5
 COAL WEIGHT (kg) 2.617
 CORE DIAM (mm) 63
 SAMPLE TYPE Core

CAN DETAILS

CAN NO 1
 CAN LENGTH (m) 0.5
 CAN WEIGHT (kg) 5.753
 CAN + SAMPLE WT (kg) 8.370
 SAMPLE WEIGHT (kg) 2.617
 CAN VOLUME (cc) 2200
 SAMPLE VOLUME(cc) 1559
 CAN VOID SPACE (cc) 641
 ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	41.1	RESIDUAL GAS (scc/g)	0.05
USBM LOST GAS (scc/g)	0.02	TOTAL RAW GAS (scc/g)	0.12
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.04
RAW DESORBED GAS (scc)	136	DAF DESORBED GAS (scc/g)	0.12
RAW DESORBED GAS (scc/g)	0.05	DAF Q1 + Q2 (scc/g)	0.16
RAW TOTAL DESORBED (scc/g)	0.07	DAF RESIDUAL GAS Q3 (scc/g)	0.12
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.27

CORE DETAILS

	Date	Time
CORE PENETRATED	16/06/2007	14:20:00
CORE LEFT BOTTOM	16/06/2007	15:19:00
CORE AT SURFACE	16/06/2007	15:21:00
COAL IN CANISTER	16/06/2007	15:29:00
CORE ON TEST	16/06/2007	15:29:00
TIME ZERO	16/06/2007	15:20:00

COAL ANALYSIS DATA

ASH %	52.9
VOLATILE MATTER %	7.5
INHERENT MOISTURE %	4.3
FIXED CARBON %	35.3

DESORPTION TIME

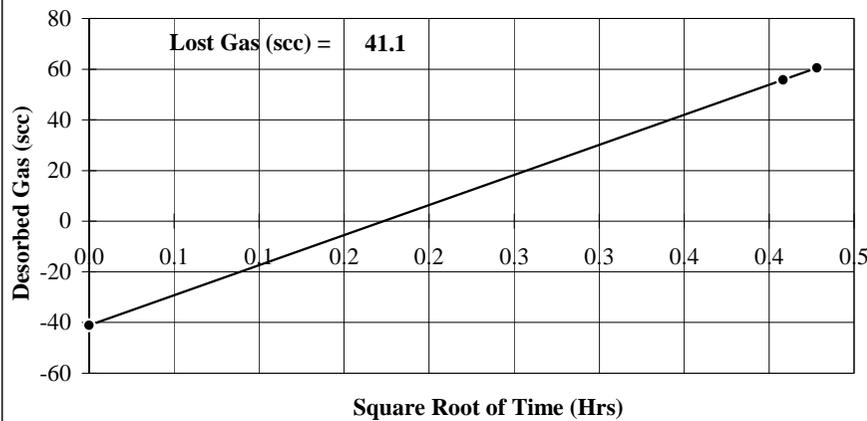
	Days
ON TEST	11.0
63% Q2	0.1
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

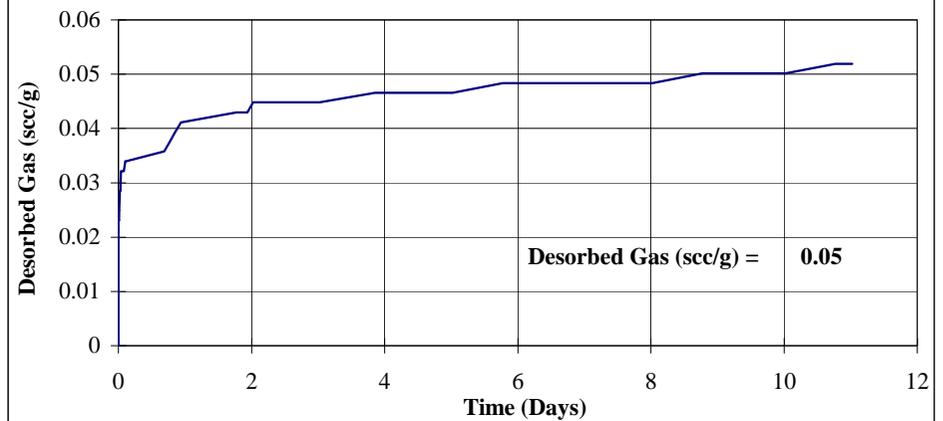
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
 Insufficient gas content
 Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

2

MID Seam A-B

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 2
SEAM NAME MID Seam A-B
DEPTH FROM (m) 297.07
DEPTH TO (m) 298.04
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.552
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 2
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.360
CAN + SAMPLE WT (kg) 10.912
SAMPLE WEIGHT (kg) 4.552
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3024
CAN VOID SPACE (cc) 1376
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)		RESIDUAL GAS (scc/g)	0.01
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.06
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	216	DAF DESORBED GAS (scc/g)	0.13
RAW DESORBED GAS (scc/g)	0.05	DAF Q1 + Q2 (scc/g)	0.13
RAW TOTAL DESORBED (scc/g)	0.05	DAF RESIDUAL GAS Q3 (scc/g)	0.03
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.15

CORE DETAILS

	Date	Time
CORE PENETRATED	17/06/2007	9:49:00
CORE LEFT BOTTOM	17/06/2007	10:22:00
CORE AT SURFACE	17/06/2007	10:24:00
COAL IN CANISTER	17/06/2007	10:33:00
CORE ON TEST	17/06/2007	10:33:00
TIME ZERO	17/06/2007	10:23:00

COAL ANALYSIS DATA

ASH %	57.8
VOLATILE MATTER %	17.1
INHERENT MOISTURE %	4.7
FIXED CARBON %	20.4

DESORPTION TIME

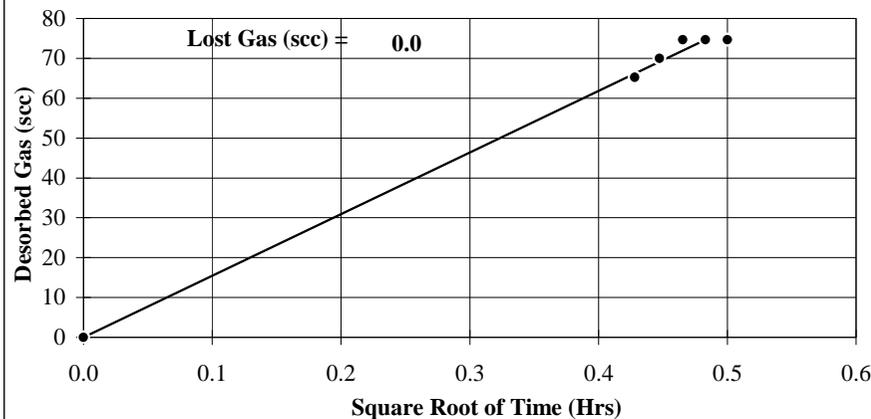
	Days
ON TEST	10.2
63% Q2	0.1
63% Q1+Q2	0.1

GAS ANALYSIS (Air-Free)

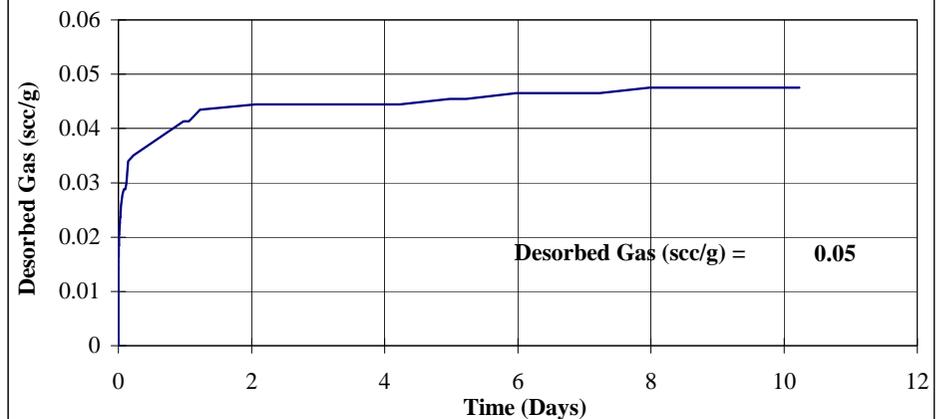
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
Insufficient gas content
Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

3

Seam B

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 3
SEAM NAME Seam B
DEPTH FROM (m) 304.40
DEPTH TO (m) 305.40
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.305
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 3
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.365
CAN + SAMPLE WT (kg) 10.670
SAMPLE WEIGHT (kg) 4.305
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)		RESIDUAL GAS (scc/g)	0.01
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.05
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	177	DAF DESORBED GAS (scc/g)	0.07
RAW DESORBED GAS (scc/g)	0.04	DAF Q1 + Q2 (scc/g)	0.07
RAW TOTAL DESORBED (scc/g)	0.04	DAF RESIDUAL GAS Q3 (scc/g)	0.02
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.08

CORE DETAILS

	Date	Time
CORE PENETRATED	17/06/2007	11:26:00
CORE LEFT BOTTOM	17/06/2007	12:05:00
CORE AT SURFACE	17/06/2007	12:07:00
COAL IN CANISTER	17/06/2007	12:14:00
CORE ON TEST	17/06/2007	12:14:00
TIME ZERO	17/06/2007	12:06:00

COAL ANALYSIS DATA

ASH %	32.9
VOLATILE MATTER %	21.9
INHERENT MOISTURE %	4.6
FIXED CARBON %	40.6

DESORPTION TIME

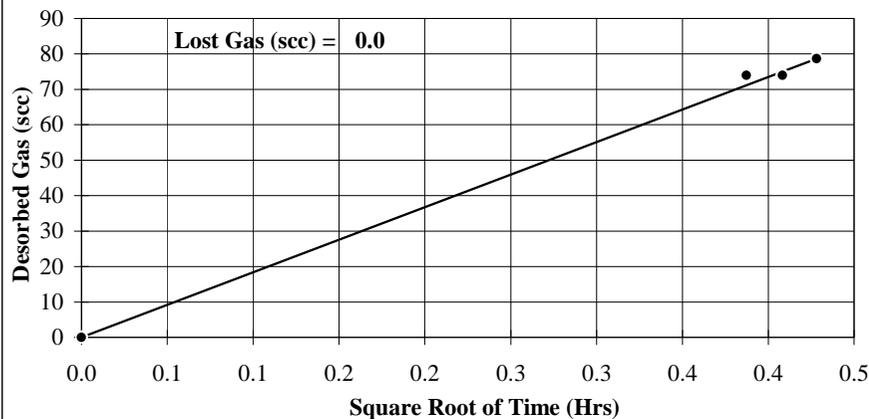
	Days
ON TEST	10.2
63% Q2	0.0
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

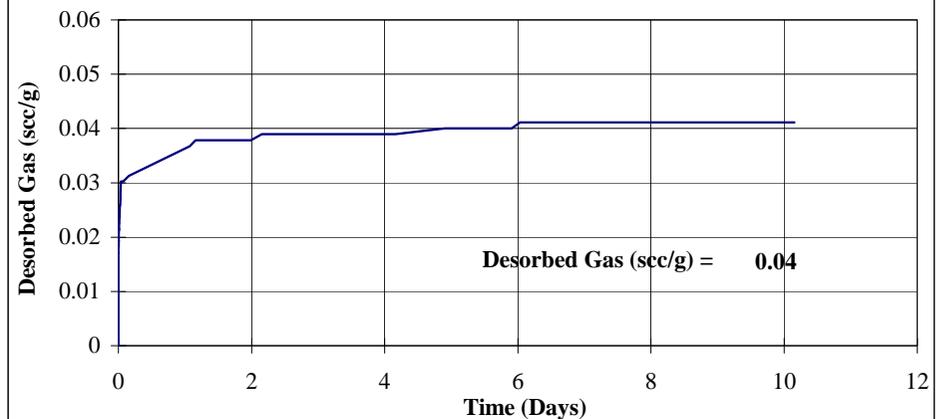
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
Insufficient gas content
Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

4

Seam B

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 4
SEAM NAME Seam B
DEPTH FROM (m) 305.40
DEPTH TO (m) 306.40
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.142
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 4
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.383
CAN + SAMPLE WT (kg) 10.525
SAMPLE WEIGHT (kg) 4.142
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)		RESIDUAL GAS (scc/g)	0.05
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.08
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	111	DAF DESORBED GAS (scc/g)	0.05
RAW DESORBED GAS (scc/g)	0.03	DAF Q1 + Q2 (scc/g)	0.05
RAW TOTAL DESORBED (scc/g)	0.03	DAF RESIDUAL GAS Q3 (scc/g)	0.09
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.14

CORE DETAILS

	Date	Time
CORE PENETRATED	17/06/2007	12:17:00
CORE LEFT BOTTOM	17/06/2007	12:56:00
CORE AT SURFACE	17/06/2007	12:58:00
COAL IN CANISTER	17/06/2007	13:07:00
CORE ON TEST	17/06/2007	13:07:00
TIME ZERO	17/06/2007	12:57:00

COAL ANALYSIS DATA

ASH %	40.8
VOLATILE MATTER %	23.4
INHERENT MOISTURE %	3.9
FIXED CARBON %	31.9

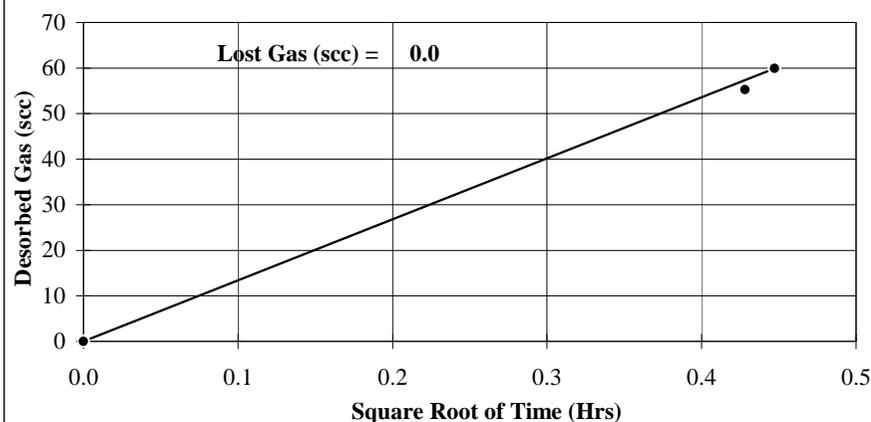
DESORPTION TIME

	Days
ON TEST	10.1
63% Q2	0.0
63% Q1+Q2	0.0

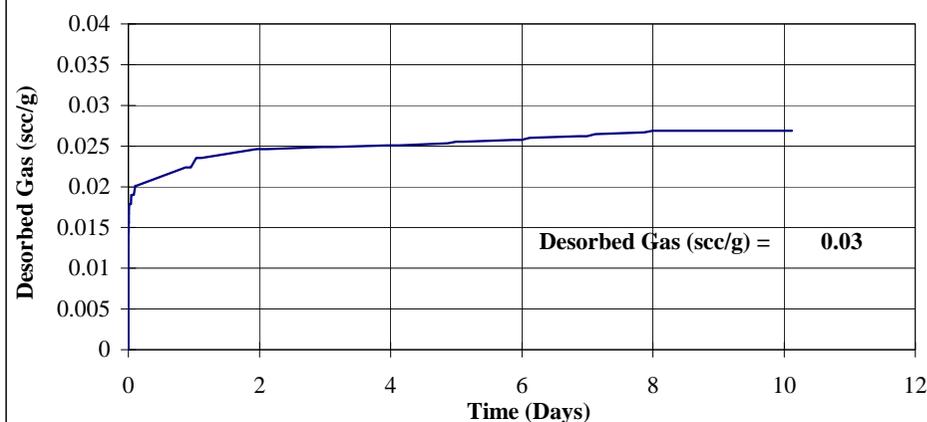
GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

5

Seam C

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 5
SEAM NAME Seam C
DEPTH FROM (m) 328.10
DEPTH TO (m) 328.60
THICKNESS (m) 0.5
COAL LENGTH (m) 0.5
COAL WEIGHT (kg) 2.320
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 5
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.410
CAN + SAMPLE WT (kg) 8.730
SAMPLE WEIGHT (kg) 2.320
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 1559
CAN VOID SPACE (cc) 2841
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc) 0.00
USBM LOST GAS (scc/g) 0.07
DESORPTION TEMP (°C) 30.0
RAW DESORBED GAS (scc) 153
RAW DESORBED GAS (scc/g) 0.07
RAW TOTAL DESORBED (scc/g) 0.07

RESIDUAL GAS (scc/g) 0.04
TOTAL RAW GAS (scc/g) 0.11
DAF LOST GAS (scc/g) 0.00
DAF DESORBED GAS (scc/g) 0.13
DAF Q1 + Q2 (scc/g) 0.13
DAF RESIDUAL GAS Q3 (scc/g) 0.08
DAF TOTAL GAS Q1+2+3 (scc/g) 0.21

CORE DETAILS

	Date	Time
CORE PENETRATED	18/06/2007	14:07:00
CORE LEFT BOTTOM	18/06/2007	15:06:00
CORE AT SURFACE	18/06/2007	15:08:00
COAL IN CANISTER	18/06/2007	15:17:00
CORE ON TEST	18/06/2007	15:17:00
TIME ZERO	18/06/2007	15:07:00

COAL ANALYSIS DATA

ASH %	44.2
VOLATILE MATTER %	19.0
INHERENT MOISTURE %	5.2
FIXED CARBON %	31.6

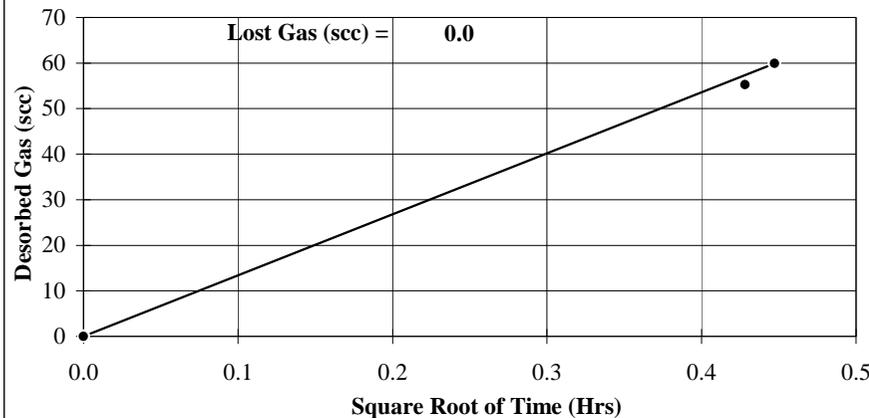
DESORPTION TIME

	Days
ON TEST	9.0
63% Q2	0.3
63% Q1+Q2	0.3

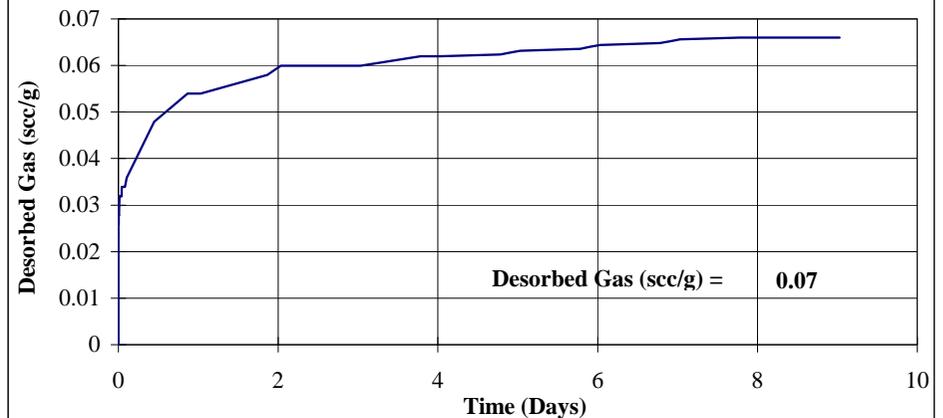
GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

6

Seam C

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 6
SEAM NAME Seam C
DEPTH FROM (m) 329.80
DEPTH TO (m) 330.80
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.452
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 6
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.309
CAN + SAMPLE WT (kg) 10.761
SAMPLE WEIGHT (kg) 4.452
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc) 0.00
USBM LOST GAS (scc/g) 0.02
DESORPTION TEMP (°C) 30.0
RAW DESORBED GAS (scc) 78
RAW DESORBED GAS (scc/g) 0.02
RAW TOTAL DESORBED (scc/g) 0.02

RESIDUAL GAS (scc/g) 0.03
TOTAL RAW GAS (scc/g) 0.05
DAF LOST GAS (scc/g) 0.00
DAF DESORBED GAS (scc/g) 0.03
DAF Q1 + Q2 (scc/g) 0.03
DAF RESIDUAL GAS Q3 (scc/g) 0.05
DAF TOTAL GAS Q1+2+3 (scc/g) 0.08

CORE DETAILS

	Date	Time
CORE PENETRATED	18/06/2007	15:19:00
CORE LEFT BOTTOM	18/06/2007	16:06:00
CORE AT SURFACE	18/06/2007	16:08:00
COAL IN CANISTER	18/06/2007	16:14:00
CORE ON TEST	18/06/2007	16:14:00
TIME ZERO	18/06/2007	16:07:00

COAL ANALYSIS DATA

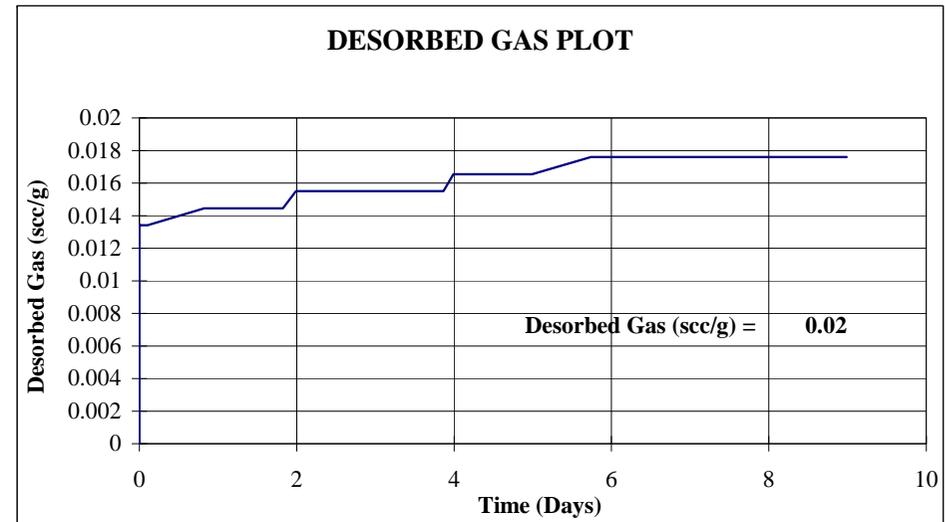
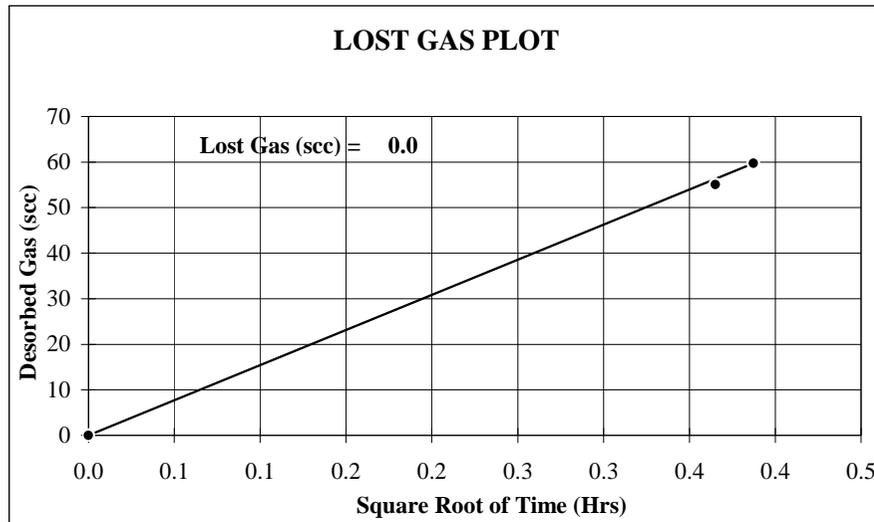
ASH % 37.2
VOLATILE MATTER % 21.4
INHERENT MOISTURE % 5.2
FIXED CARBON % 36.2

DESORPTION TIME

ON TEST 9.0 Days
63% Q2 0.0
63% Q1+Q2 0.0

GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

7

Seam D

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 7
SEAM NAME Seam D
DEPTH FROM (m) 355.70
DEPTH TO (m) 356.20
THICKNESS (m) 0.5
COAL LENGTH (m) 0.5
COAL WEIGHT (kg) 2.018
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 7
CAN LENGTH (m) 0.5
CAN WEIGHT (kg) 3.562
CAN + SAMPLE WT (kg) 5.580
SAMPLE WEIGHT (kg) 2.018
CAN VOLUME (cc) 2200
SAMPLE VOLUME(cc) 1559
CAN VOID SPACE (cc) 641
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	54.8	RESIDUAL GAS (scc/g)	0.02
USBM LOST GAS (scc/g)	0.03	TOTAL RAW GAS (scc/g)	0.14
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.06
RAW DESORBED GAS (scc)	191	DAF DESORBED GAS (scc/g)	0.21
RAW DESORBED GAS (scc/g)	0.09	DAF Q1 + Q2 (scc/g)	0.27
RAW TOTAL DESORBED (scc/g)	0.12	DAF RESIDUAL GAS Q3 (scc/g)	0.04
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.32

CORE DETAILS

	Date	Time
CORE PENETRATED	21/06/2007	11:01:00
CORE LEFT BOTTOM	21/06/2007	12:43:00
CORE AT SURFACE	21/06/2007	12:47:00
COAL IN CANISTER	21/06/2007	12:57:00
CORE ON TEST	21/06/2007	12:57:00
TIME ZERO	21/06/2007	12:45:00

COAL ANALYSIS DATA

ASH %	47.3
VOLATILE MATTER %	17.9
INHERENT MOISTURE %	8.0
FIXED CARBON %	26.8

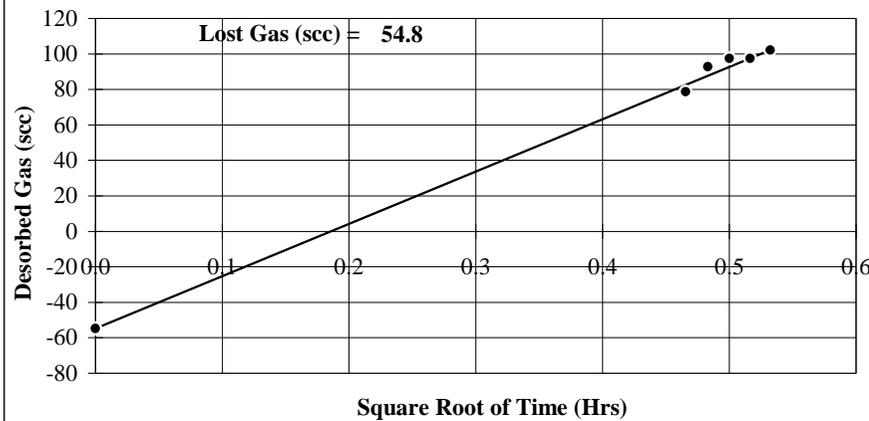
DESORPTION TIME

	Days
ON TEST	6.1
63% Q2	0.0
63% Q1+Q2	0.0

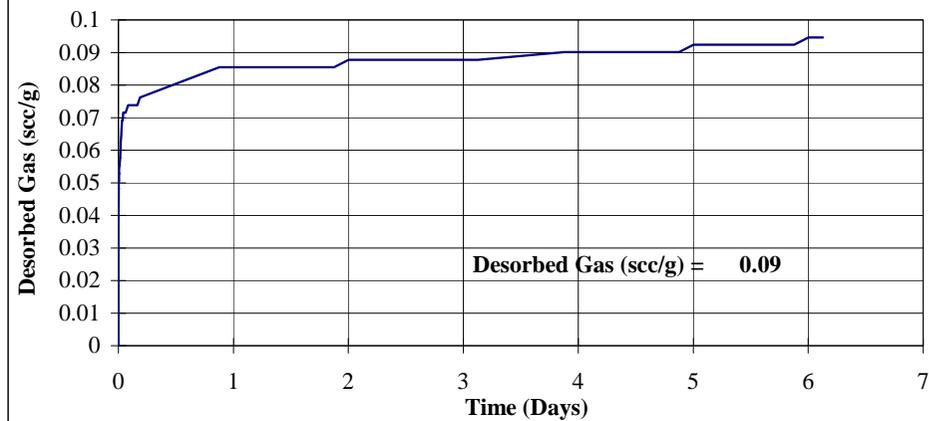
GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

8

Seam D

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 8
SEAM NAME Seam D
DEPTH FROM (m) 356.50
DEPTH TO (m) 357.30
THICKNESS (m) 0.8
COAL LENGTH (m) 0.8
COAL WEIGHT (kg) 2.870
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 8
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 5.920
CAN + SAMPLE WT (kg) 8.790
SAMPLE WEIGHT (kg) 2.870
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 2494
CAN VOID SPACE (cc) 1906
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	12.3	RESIDUAL GAS (scc/g)	0.01
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.08
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	237	DAF DESORBED GAS (scc/g)	0.08
RAW DESORBED GAS (scc/g)	0.07	DAF Q1 + Q2 (scc/g)	0.09
RAW TOTAL DESORBED (scc/g)	0.07	DAF RESIDUAL GAS Q3 (scc/g)	0.01
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.10

CORE DETAILS

	Date	Time
CORE PENETRATED	21/06/2007	14:36:00
CORE LEFT BOTTOM	21/06/2007	15:21:00
CORE AT SURFACE	21/06/2007	15:24:00
COAL IN CANISTER	21/06/2007	15:32:00
CORE ON TEST	21/06/2007	15:32:00
TIME ZERO	21/06/2007	15:22:30

COAL ANALYSIS DATA

ASH %	16.0
VOLATILE MATTER %	28.4
INHERENT MOISTURE %	3.9
FIXED CARBON %	51.7

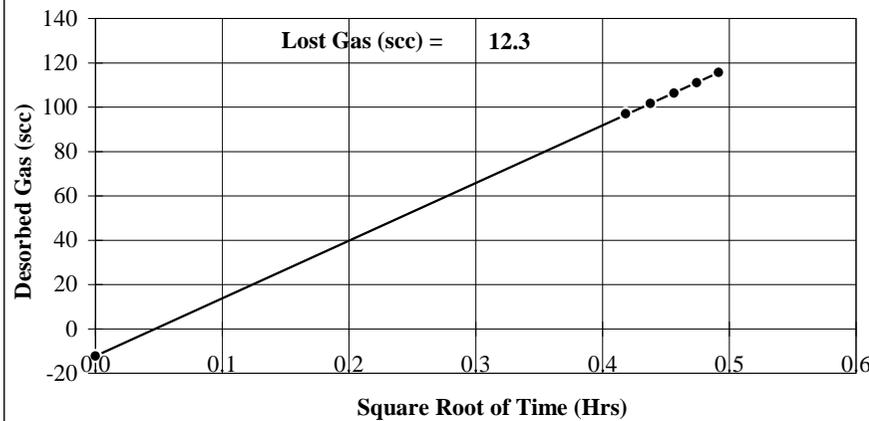
DESORPTION TIME

	Days
ON TEST	6.0
63% Q2	0.0
63% Q1+Q2	0.0

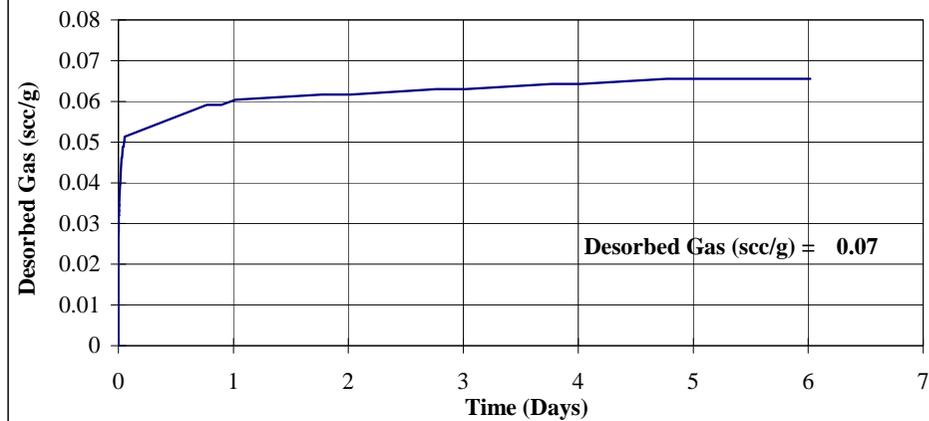
GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

9

Seam D

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 9
SEAM NAME Seam D
DEPTH FROM (m) 363.40
DEPTH TO (m) 364.40
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.520
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 9
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.360
CAN + SAMPLE WT (kg) 10.880
SAMPLE WEIGHT (kg) 4.520
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)		RESIDUAL GAS (scc/g)	0.01
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.03
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	74	DAF DESORBED GAS (scc/g)	0.03
RAW DESORBED GAS (scc/g)	0.02	DAF Q1 + Q2 (scc/g)	0.03
RAW TOTAL DESORBED (scc/g)	0.02	DAF RESIDUAL GAS Q3 (scc/g)	0.02
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.05

CORE DETAILS

	Date	Time
CORE PENETRATED	23/06/2007	12:17:00
CORE LEFT BOTTOM	23/06/2007	13:18:00
CORE AT SURFACE	23/06/2007	13:24:00
COAL IN CANISTER	23/06/2007	13:31:00
CORE ON TEST	23/06/2007	13:31:00
TIME ZERO	23/06/2007	13:21:00

COAL ANALYSIS DATA

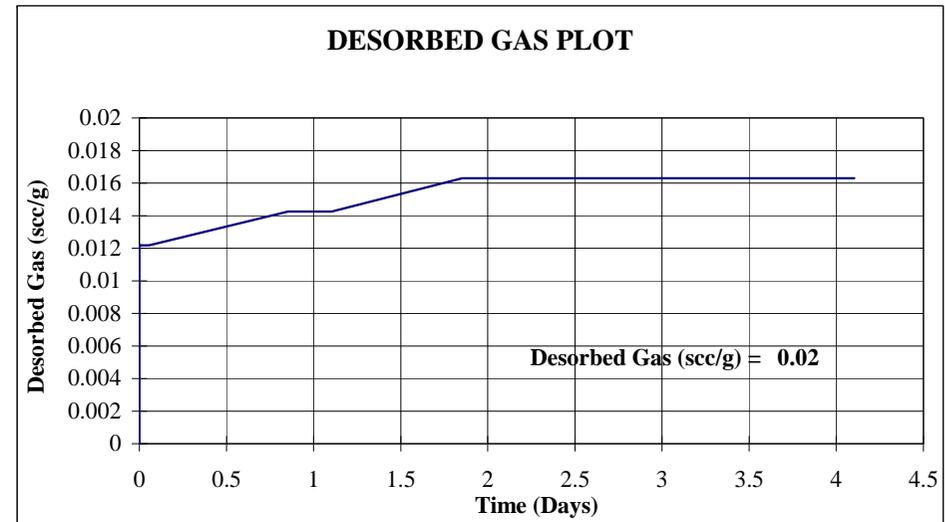
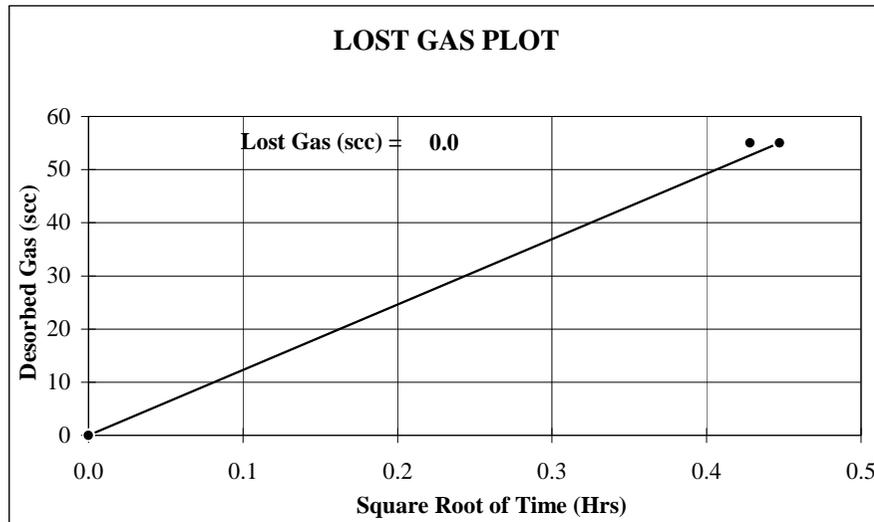
ASH %	44.4
VOLATILE MATTER %	20.0
INHERENT MOISTURE %	4.8
FIXED CARBON %	30.8

DESORPTION TIME

	Days
ON TEST	4.1
63% Q2	0.0
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

10

Seam F

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 10
SEAM NAME Seam F
DEPTH FROM (m) 405.00
DEPTH TO (m) 406.00
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.910
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 10
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 5.790
CAN + SAMPLE WT (kg) 10.700
SAMPLE WEIGHT (kg) 4.910
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	18.8	RESIDUAL GAS (scc/g)	0.05
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.08
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.01
RAW DESORBED GAS (scc)	133	DAF DESORBED GAS (scc/g)	0.05
RAW DESORBED GAS (scc/g)	0.03	DAF Q1 + Q2 (scc/g)	0.05
RAW TOTAL DESORBED (scc/g)	0.03	DAF RESIDUAL GAS Q3 (scc/g)	0.08
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.13

CORE DETAILS

	Date	Time
CORE PENETRATED	27/06/2007	14:53:00
CORE LEFT BOTTOM	27/06/2007	15:34:00
CORE AT SURFACE	27/06/2007	15:39:00
COAL IN CANISTER	27/06/2007	15:46:00
CORE ON TEST	27/06/2007	15:46:00
TIME ZERO	27/06/2007	15:36:30

COAL ANALYSIS DATA

ASH %	31.9
VOLATILE MATTER %	23.9
INHERENT MOISTURE %	5.4
FIXED CARBON %	38.8

DESORPTION TIME

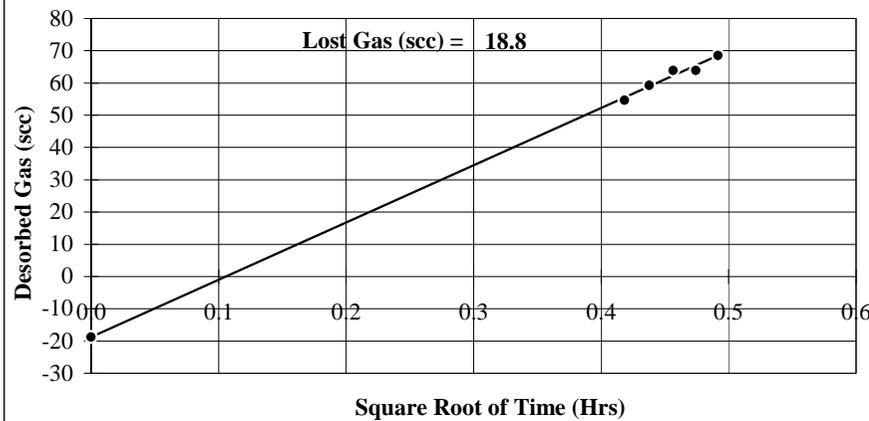
	Days
ON TEST	2.8
63% Q2	0.0
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

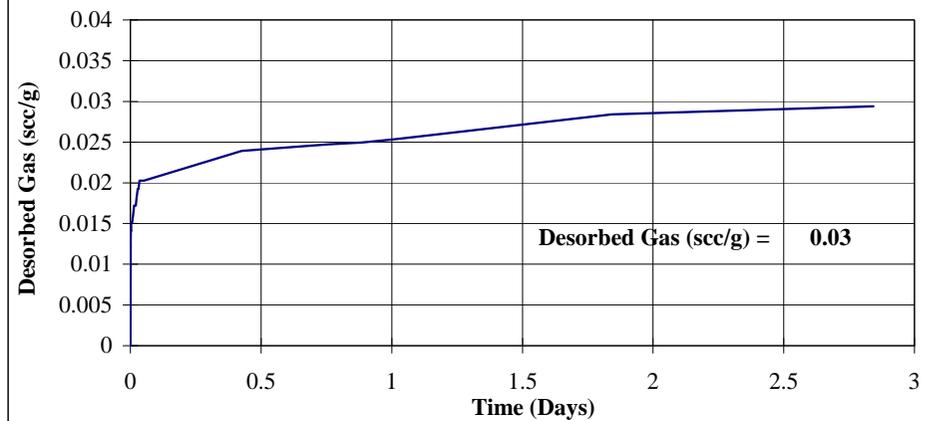
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
Insufficient gas content
Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

11

Seam F

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 11
SEAM NAME Seam F
DEPTH FROM (m) 406.80
DEPTH TO (m) 407.80
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.217
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 11
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.483
CAN + SAMPLE WT (kg) 10.700
SAMPLE WEIGHT (kg) 4.217
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	9.6	RESIDUAL GAS (scc/g)	0.02
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.06
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	149	DAF DESORBED GAS (scc/g)	0.06
RAW DESORBED GAS (scc/g)	0.03	DAF Q1 + Q2 (scc/g)	0.06
RAW TOTAL DESORBED (scc/g)	0.04	DAF RESIDUAL GAS Q3 (scc/g)	0.04
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.10

CORE DETAILS

	Date	Time
CORE PENETRATED	27/06/2007	14:53:00
CORE LEFT BOTTOM	27/06/2007	15:34:00
CORE AT SURFACE	27/06/2007	15:39:00
COAL IN CANISTER	27/06/2007	15:46:00
CORE ON TEST	27/06/2007	15:46:00
TIME ZERO	27/06/2007	15:36:30

COAL ANALYSIS DATA

ASH %	41.1
VOLATILE MATTER %	23.3
INHERENT MOISTURE %	4.3
FIXED CARBON %	33.3

DESORPTION TIME

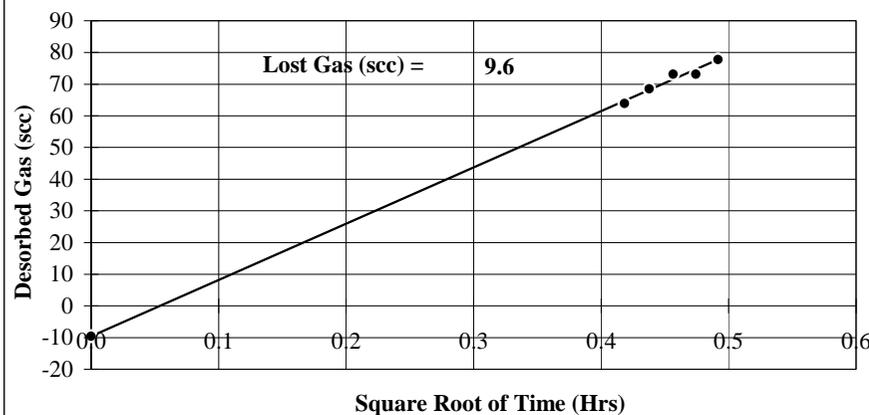
	Days
ON TEST	2.8
63% Q2	0.0
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

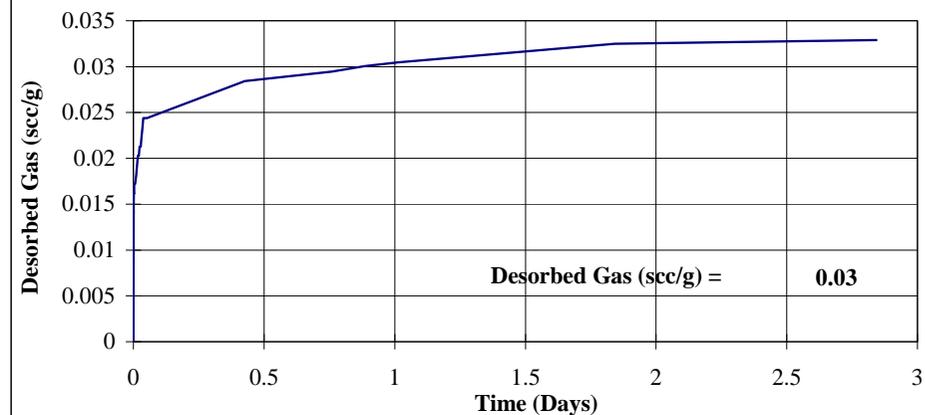
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
Insufficient gas content
Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

12

Seam G

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 12
SEAM NAME Seam G
DEPTH FROM (m) 453.65
DEPTH TO (m) 454.65
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.447
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 12
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.423
CAN + SAMPLE WT (kg) 10.870
SAMPLE WEIGHT (kg) 4.447
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	8.0	RESIDUAL GAS (scc/g)	0.03
USBM LOST GAS (scc/g)	0.00	TOTAL RAW GAS (scc/g)	0.08
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.00
RAW DESORBED GAS (scc)	202	DAF DESORBED GAS (scc/g)	0.10
RAW DESORBED GAS (scc/g)	0.05	DAF Q1 + Q2 (scc/g)	0.11
RAW TOTAL DESORBED (scc/g)	0.05	DAF RESIDUAL GAS Q3 (scc/g)	0.07
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.17

CORE DETAILS

	Date	Time
CORE PENETRATED	30/06/2007	13:20:00
CORE LEFT BOTTOM	30/06/2007	14:05:00
CORE AT SURFACE	30/06/2007	14:09:00
COAL IN CANISTER	30/06/2007	14:15:00
CORE ON TEST	30/06/2007	14:15:00
TIME ZERO	30/06/2007	14:07:00

COAL ANALYSIS DATA

ASH %	48.6
VOLATILE MATTER %	15.3
INHERENT MOISTURE %	6.8
FIXED CARBON %	29.3

DESORPTION TIME

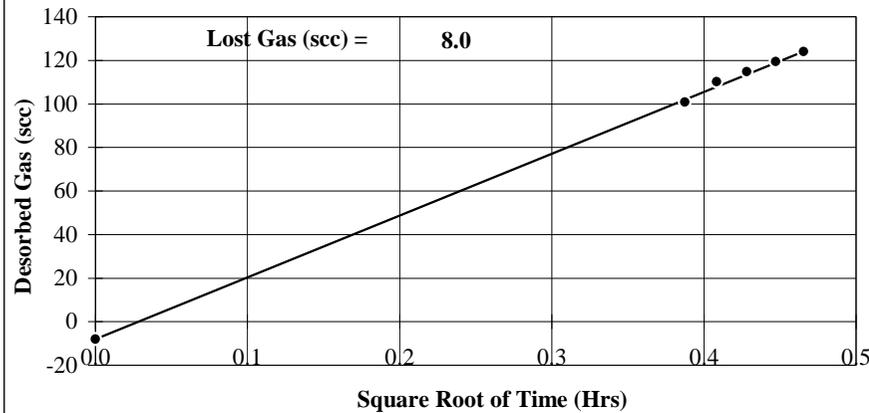
	Days
ON TEST	0.1
63% Q2	0.0
63% Q1+Q2	0.0

GAS ANALYSIS (Air-Free)

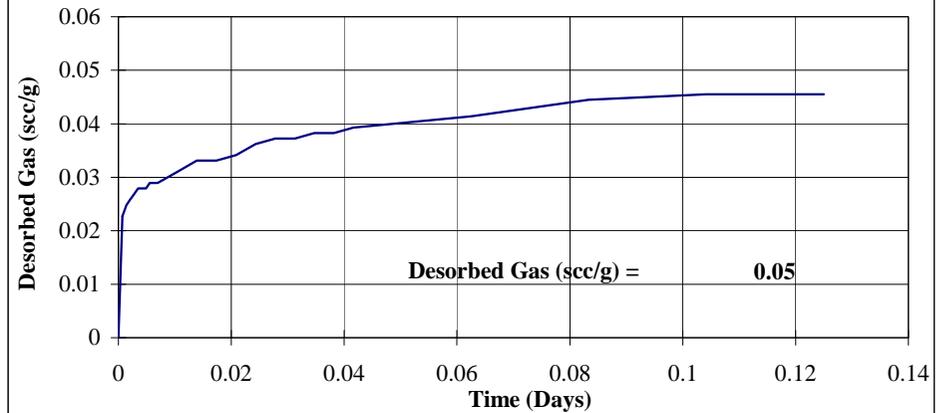
	Early	Mid	Late
CH4 (%)			
CO2 (%)			
N2 (%)			

Insufficient gas content
Insufficient gas content
Insufficient gas content

LOST GAS PLOT



DESORBED GAS PLOT



ACS Laboratories Pty Ltd GAS DESORPTION DATA SUMMARY

Fingal 41B

13

Seam G

WELL NAME: Fingal 41B

SAMPLE DETAILS

SAMPLE NO 13
SEAM NAME Seam G
DEPTH FROM (m) 462.58
DEPTH TO (m) 463.58
THICKNESS (m) 1.0
COAL LENGTH (m) 1.0
COAL WEIGHT (kg) 4.413
CORE DIAM (mm) 63
SAMPLE TYPE Core

CAN DETAILS

CAN NO 13
CAN LENGTH (m) 1.0
CAN WEIGHT (kg) 6.327
CAN + SAMPLE WT (kg) 10.740
SAMPLE WEIGHT (kg) 4.413
CAN VOLUME (cc) 4400
SAMPLE VOLUME(cc) 3117
CAN VOID SPACE (cc) 1283
ESTIMATED VOID (cc) 0

DESORBED GAS

USBM LOST GAS (scc)	35.9	RESIDUAL GAS (scc/g)	0.04
USBM LOST GAS (scc/g)	0.01	TOTAL RAW GAS (scc/g)	0.08
DESORPTION TEMP (°C)	30.0	DAF LOST GAS (scc/g)	0.01
RAW DESORBED GAS (scc)	131	DAF DESORBED GAS (scc/g)	0.05
RAW DESORBED GAS (scc/g)	0.03	DAF Q1 + Q2 (scc/g)	0.07
RAW TOTAL DESORBED (scc/g)	0.04	DAF RESIDUAL GAS Q3 (scc/g)	0.07
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.14

CORE DETAILS

	Date	Time
CORE PENETRATED	30/06/2007	16:10:00
CORE LEFT BOTTOM	30/06/2007	16:57:00
CORE AT SURFACE	30/06/2007	17:01:00
COAL IN CANISTER	30/06/2007	17:07:00
CORE ON TEST	30/06/2007	17:07:00
TIME ZERO	30/06/2007	16:59:00

COAL ANALYSIS DATA

ASH %	39.4
VOLATILE MATTER %	17.4
INHERENT MOISTURE %	5.8
FIXED CARBON %	37.4

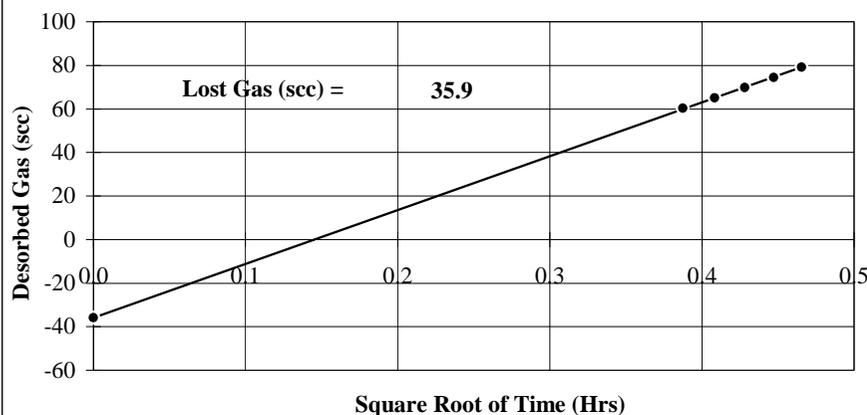
DESORPTION TIME

	Days
ON TEST	1.8
63% Q2	0.0
63% Q1+Q2	0.0

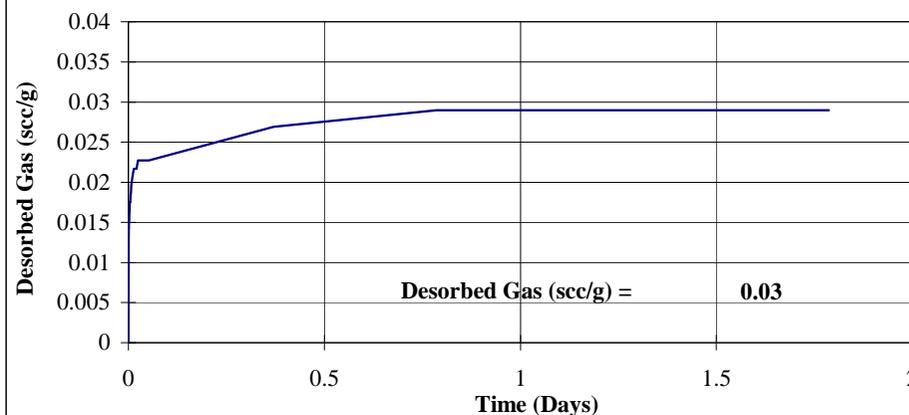
GAS ANALYSIS (Air-Free)

	Early	Mid	Late
CH4 (%)	Insufficient gas content		
CO2 (%)	Insufficient gas content		
N2 (%)	Insufficient gas content		

LOST GAS PLOT



DESORBED GAS PLOT



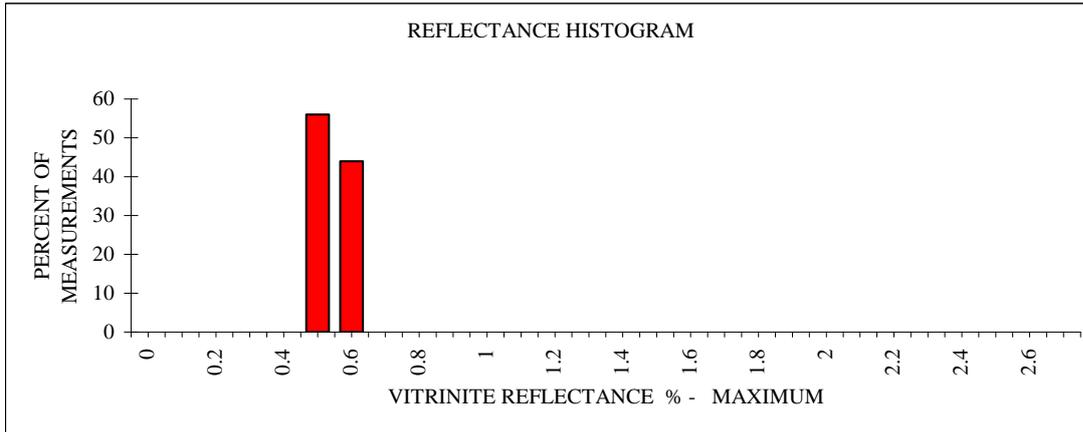
CHAPTER 3

MACERAL ANALYSES

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 7

REPORT 1023-06
 DATE 19/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% 1)
TELOVITRINITE	0.59	40	0.51	0.68	0.04	0.55
DETROVITRINITE	0.54	10	0.51	0.6	0.03	0.50
ALL VITRINITE	0.58	50	0.51	0.68	0.05	0.54

VITRINITE REFLECTANCE DISTRIBUTION

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
TELOVITRINITE %					38	42				
DETROVITRINITE %					18	2				
ALL VITRINITE %					56	44				

	TOTAL
TELOVITRINITE %	80
DETROVITRINITE %	20
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 7

REPORT 1023-06
 DATE 19/10/07

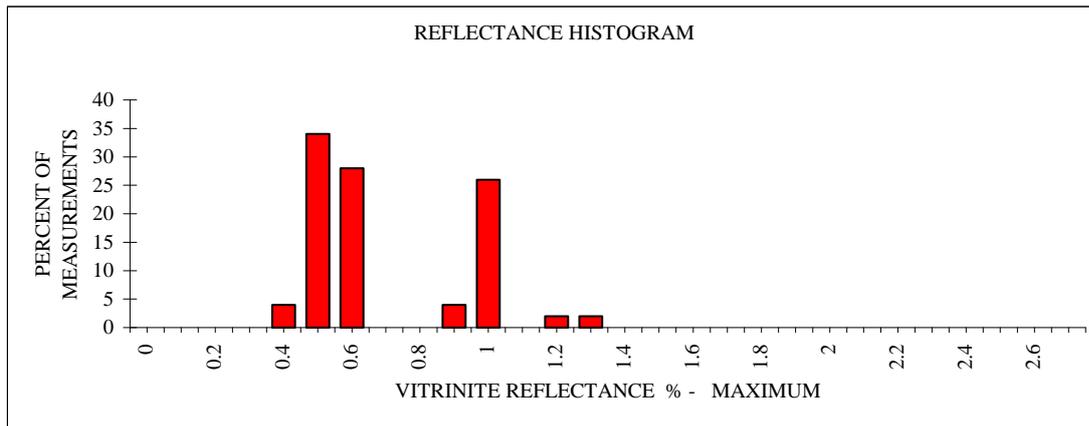
Maceral Group	%	%mmf	Maceral Sub Group	Maceral	%	%mmf
ISO7404:BS6127:AS2856			Telovitrinite	Textinite Texto-ulminite Eu-ulminite Telocollinite	21.8	25.3
Vitrinite	24.9	28.8	Detrovitrinite	Attrinite Densinite Desmocollinite	3.1	3.5
			Gelovitrinite	Corpogelinite Porigelinite Eugelinite		
Liptinite	5.6	6.5		Sporinite Cutinite Resinite Liptodetrinite Alginite Suberinite Fluorinite Exsudatinite Bituminite	0.5 5.1	0.6 5.8
			Telo-inertinite	Fusinite Semifusinite Funginite	10.8 42.1	12.5 48.6
Inertinite	56.0	64.7	Detro-inertinite	Inertodetrinite Micrinite	2.5	2.9
			Gelo-inertinite	Macrinite	0.5	0.6
Minerals	13.5				13.5	
Points counted	100	554			100.0	100.0

COMMENTS: Minerals mainly carbonaceous shale, minor shale; much disseminated clays, minor quartz, trace carbonate, slight trace pyrite.

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 8

REPORT 1023-06
 DATE 23/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% 1)
Lower rank vitrinite	0.58		0.49	0.67	0.05	0.55
Higher rank vitrinite	1.05		0.90	1.31	0.10	0.99
ALL VITRINITE	0.74		0.49	1.31	0.24	0.70

VITRINITE REFLECTANCE DISTRIBUTION

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
Lower rank vitrinite				4	34	28							
Higher rank vitrinite									4	26		2	2
ALL VITRINITE %				4	34	28			4	26		2	2

	V14	V15	V16	V17	V18	V19	V20
Lower rank vitrinite							
Higher rank vitrinite							
ALL VITRINITE %							

	TOTAL
Lower rank vitrinite	66
Higher rank vitrinite	34
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 8

REPORT 1023-06
 DATE 23/10/07

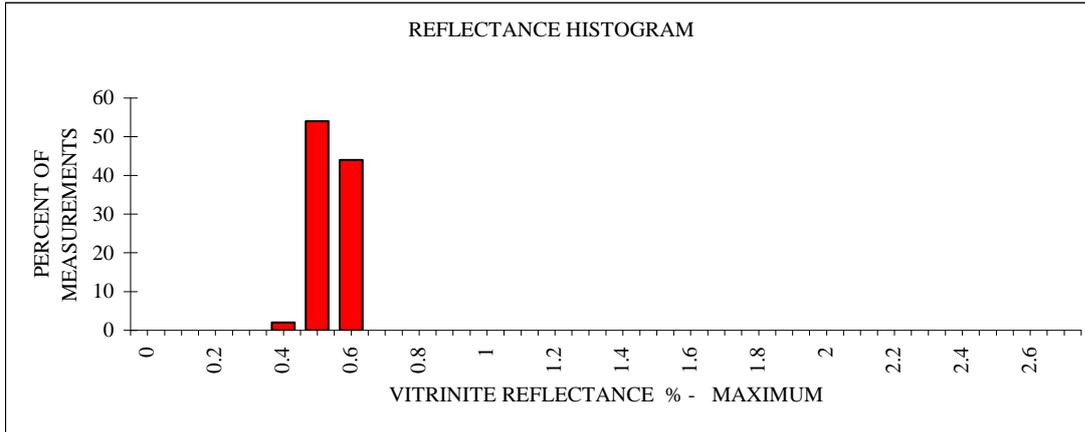
Maceral Group	%	%mmf	Maceral Sub Group	Maceral	%	%mmf
ISO7404:BS6127:AS2856			Telovitrinite	Textinite Texto-ulminite Eu-ulminite Telocollinite	27.9	30.2
Vitrinite*	32.3	34.9	Detrovitrinite	Attrinite Densinite Desmocollinite	4.3	4.7
(95% lower rank:5% higher rank)			Gelovitrinite	Corpogelinite Porigelinite Eugelinite		
Liptinite	6.4	6.9		Sporinite Cutinite Resinite Liptodetrinite Alginite Suberinite Fluorinite Exsudatinite Bituminite	1.3 5.1	1.4 5.5
Inertinite	53.8	58.2	Telo-inertinite	Fusinite Semifusinite Funginite	8.9 37.5	9.6 40.6
			Detro-inertinite	Inertodetrinite Micrinite	5.1	5.5
			Gelo-inertinite	Macrinite	2.3	2.4
Minerals	7.5				7.5	
Points counted	100	100			100.0	100.0
		530				

COMMENTS: Minerals mainly shale & carbonaceous shale; much disseminated clays, minor quartz, trace carbonate, slight trace pyrite.

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 9

REPORT 1023-06
 DATE 19/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% 1)
TELOVITRINITE	0.59	45	0.49	0.68	0.05	0.56
DETROVITRINITE	0.56	5	0.54	0.6	0.03	0.53
ALL VITRINITE	0.59	50	0.49	0.68	0.04	0.55

VITRINITE REFLECTANCE DISTRIBUTION

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
TELOVITRINITE %				2	46	42				
DETROVITRINITE %					8	2				
ALL VITRINITE %				2	54	44				

	TOTAL
TELOVITRINITE %	90
DETROVITRINITE %	10
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 9

REPORT 1023-06
 DATE 19/10/07

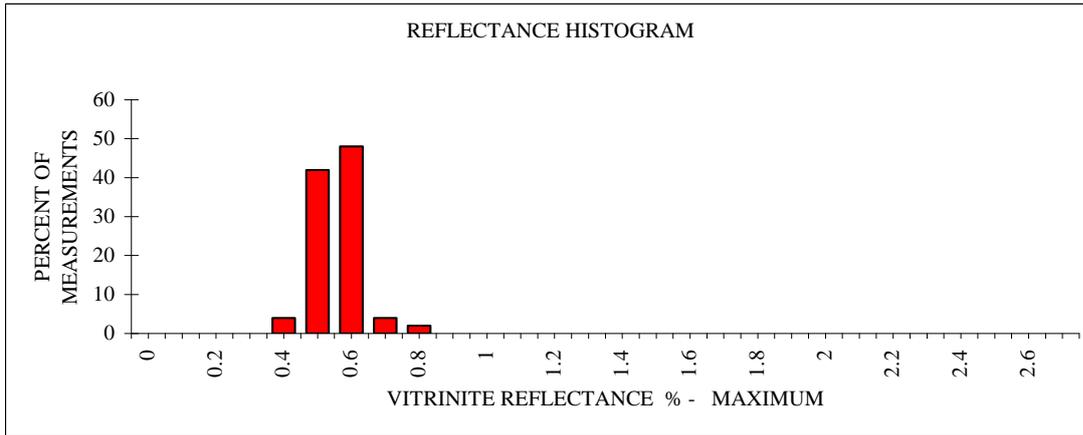
Maceral Group	%	%mmf	Maceral Sub Group	Maceral	%	%mmf
ISO7404:BS6127:AS2856			Telovitrinite	Textinite Texto-ulminite Eu-ulminite Telocollinite	19.0	24.6
Vitrinite	21.8	28.2	Detrovitrinite	Attrinite Densinite Desmocollinite	2.8	3.6
			Gelovitrinite	Corpogelinite Porigelinite Eugelinite		
Liptinite	6.2	8.0		Sporinite Cutinite Resinite Liptodetrinite Alginite Suberinite Fluorinite Exsudatinite Bituminite	1.4 4.7	1.8 6.2
			Telo-inertinite	Fusinite Semifusinite Funginite	2.5 40.9	3.2 53.1
Inertinite	49.2	63.8	Detro-inertinite	Inertodetrinite Micrinite	3.7	4.8
			Gelo-inertinite	Macrinite	2.1	2.7
Minerals	22.8				22.8	
Points counted	100	569			100.0	100.0

COMMENTS: Minerals mainly shale & carbonaceous shale; much disseminated clays, minor quartz, trace carbonate, slight trace pyrite.

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 10

REPORT 1023-06
 DATE 19/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% 1)
TELOVITRINITE	0.60	46	0.47	0.8	0.06	0.57
DETROVITRINITE	0.60	4	0.43	0.72	0.12	0.56
ALL VITRINITE	0.60	50	0.43	0.8	0.07	0.56

VITRINITE REFLECTANCE DISTRIBUTION

	V3	V4	V5	V6	V7	V8	V9
TELOVITRINITE %		2	40	46	2	2	
DETROVITRINITE %		2	2	2	2		
ALL VITRINITE %		4	42	48	4	2	

	TOTAL
TELOVITRINITE %	92
DETROVITRINITE %	8
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 10

REPORT 1023-06
 DATE 19/10/07

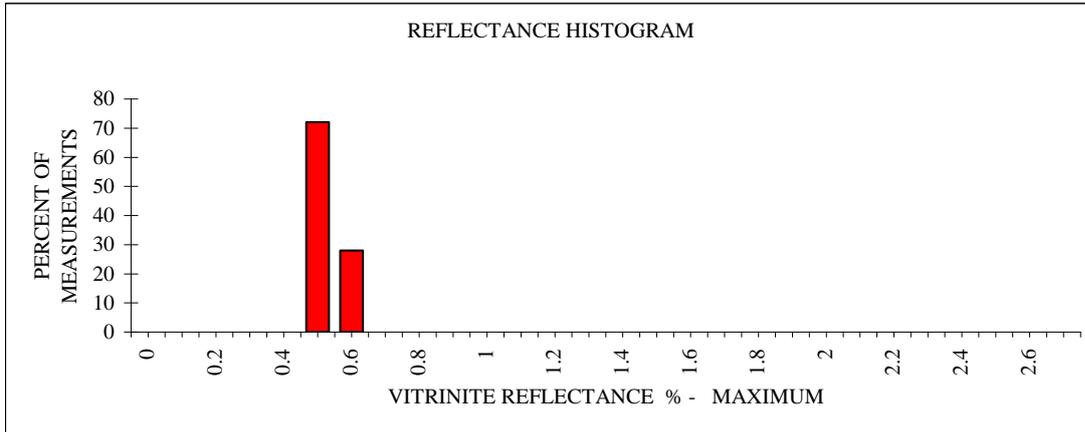
Maceral Group % ISO7404:BS6127:AS2856	%mmf	Maceral Sub Group	Maceral Textinite Texto-ulminite Eu-ulminite Telocollinite	%	%mmf	
				11.9	14.2	
Vitrinite	13.3	15.8	Detrovitrinite	Attrinite Densinite Desmocollinite	1.3	1.6
			Gelovitrinite	Corpogelinite Porigelinite Eugelinite		
Liptinite	4.5	5.4		Sporinite Cutinite Resinite	0.3 3.7 0.5	0.4 4.4 0.6
				Liptodetrinite Alginite Suberinite Fluorinite Exsudatinite Bituminite		
			Telo-inertinite	Fusinite Semifusinite Funginite	7.2 53.8	8.6 64.1
Inertinite	66.1	78.8	Detro-inertinite	Inertodetrinite Micrinite	4.2	5.0
			Gelo-inertinite	Macrinite	0.8	1.0
Minerals	16.1				16.1	
	-----				-----	
Points counted	100	100			100.0	100.0
		595				

COMMENTS: Minerals mainly shale, much disseminated clays, trace carbonate, trace quartz, slight trace pyrite.

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 11

REPORT 1023-06
 DATE 19/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% 1)
TELOVITRINITE	0.57	47	0.51	0.68	0.03	0.54
DETROVITRINITE	0.56	3	0.55	0.57	0.01	0.53
ALL VITRINITE	0.57	50	0.51	0.68	0.03	0.54

VITRINITE REFLECTANCE DISTRIBUTION

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
TELOVITRINITE %					66	28				
DETROVITRINITE %					6					
ALL VITRINITE %					72	28				

	TOTAL
TELOVITRINITE %	94
DETROVITRINITE %	6
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

COAL PETROGRAPHY - VITRINITE REFLECTANCE

CLIENT: Pure Energy Resources Limited
 SAMPLE FINGAL 41B
 SAMPLE 11

REPORT 1023-06
 DATE 19/10/07

Maceral Group % ISO7404:BS6127:AS2856	%mmf	Maceral Sub Group	Maceral Textinite Texto-ulminite Eu-ulminite Telocollinite	%	%mmf	
				26.4	36.5	
Vitrinite	27.3	37.8	Detrovitrinite	Attrinite Densinite Desmocollinite	0.9	1.2
			Gelovitrinite	Corpogelinite Porigelinite Eugelinite		
				Sporinite	0.7	1.0
				Cutinite	4.3	5.9
Liptinite	5.0	6.9		Resinite Liptodetrinite Alginite Suberinite Fluorinite Exsudatinite Bituminite		
			Telo-inertinite	Fusinite Semifusinite Funginite	2.0 35.7	2.7 49.4
Inertinite	40.0	55.3	Detro-inertinite	Inertodetrinite Micrinite	1.8 0.2	2.5 0.2
			Gelo-inertinite	Macrinite	0.4	0.5
Minerals	27.7				27.7	
	-----				-----	
Points counted	100	100			100.0	100.0
		560				

COMMENTS: Minerals mainly shale; much disseminated clays, minor carbonate, much quartz, slight trace pyrite.

CHAPTER 4

ADSORPTION ISOTHERMS

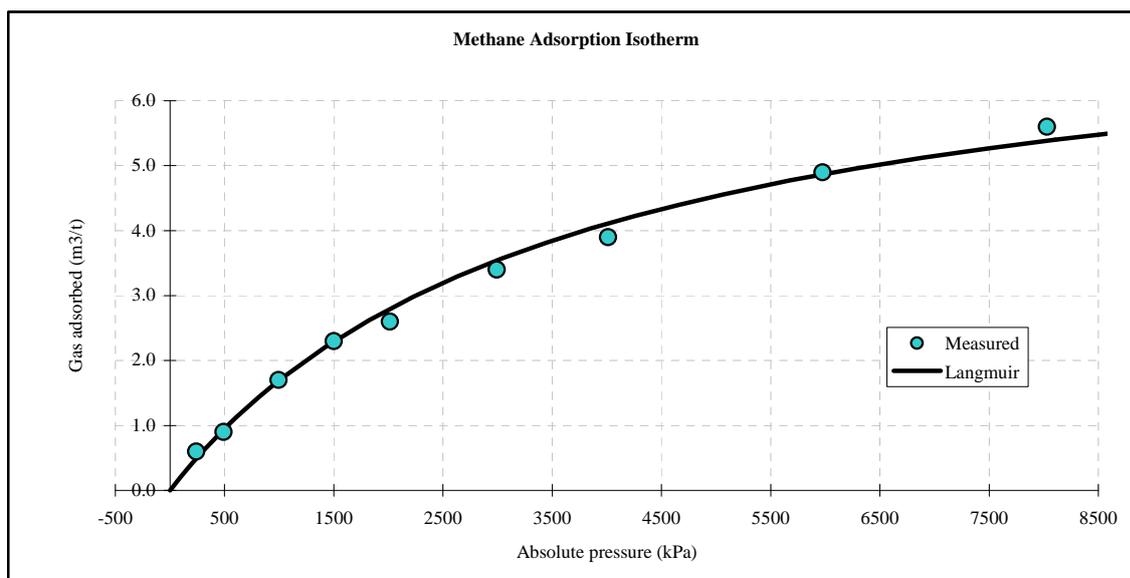
ADSORPTION ISOTHERM AT 25°C

CLIENT: Pure Energy Resources Limited
SAMPLE: Fingal-41B Sample 7
SAMPLE DEPTH: 355.70 m

SEAM: D
REPORT: 1023-06

Isotherm		$C = V_L \cdot P / (P + P_L)$
C: gas content, P: pressure		
V _L and P _L : Langmuir Volume and Pressure		
Gauge pressure (P) kPa	Gas adsorbed (C, m ³ /t) fitted	
0	0.00	
310	0.59	
621	1.09	
1276	1.94	
2551	3.10	
5102	4.40	
6067	4.71	

Coal density		
(He, g/cc)	1.58	
Proximate analysis (%)		
	daf	
Air dried moisture	8.0	-
Volatiles	17.9	40.04
Fixed C	26.8	59.96
Ash	47.3	-
Total	100.0	100.00



Langmuir Isotherm Parameters

Gas adsorbed (desorbable)	Gas adsorbed (total gas)	V_L(abs, daf)
V _L (gauge) = 7.59 m ³ /t	V _L (abs) = 7.80 m ³ /t	12.19
P _L (gauge) = 3701 kPa	P _L (abs) = 3600 kPa	
	Gas content at 1 atm.	0.21 m ³ /t

Abs. Pressure (kPa)	Total adsorbed gas (m ³ /t)
240	0.6
492	0.9
994	1.7
1500	2.3
2014	2.6
2992	3.4
4012	3.9
5975	4.9
8029	5.6

CH4 storage capacity of coal at seam depth (based on isotherm)
3.67 m³/t

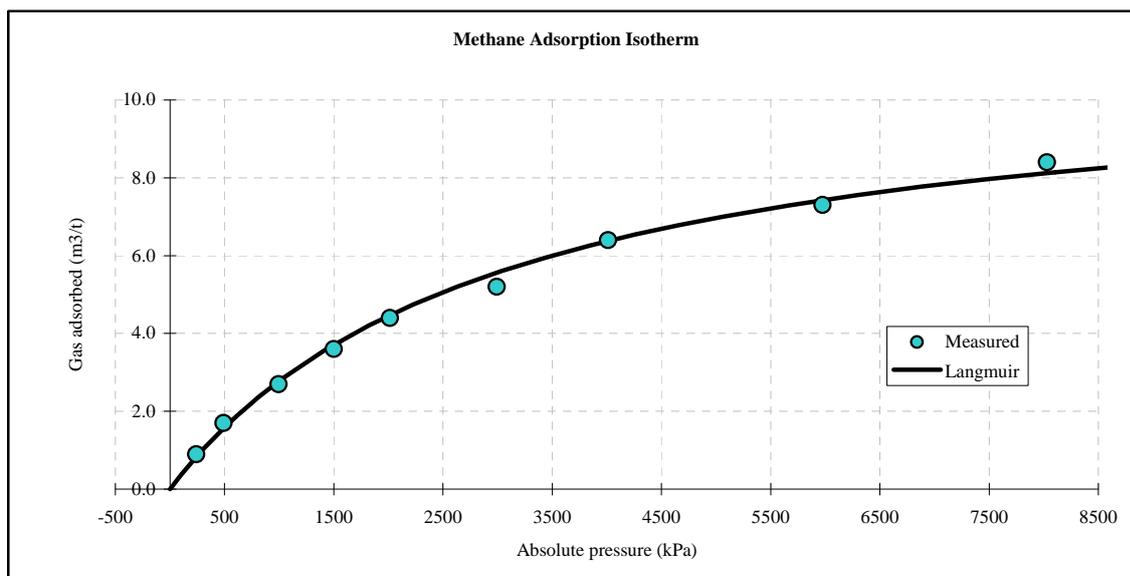
ADSORPTION ISOTHERM AT 25°C

CLIENT: Pure Energy Resources Limited
 SAMPLE: Fingal-41B Sample 8
 SAMPLE DEPTH: 356.50 m

SEAM: D
 REPORT: 1023-06

Isotherm		$C = V_L \cdot P / (P + P_L)$
C: gas content, P: pressure		
V _L and P _L : Langmuir Volume and Pressure		
Gauge pressure (P) kPa	Gas adsorbed (C, m ³ /t)	
		fitted
0		0.00
310		0.98
621		1.79
1276		3.14
2551		4.86
5102		6.71
6067		7.14

Coal density		
(He, g/cc)	1.43	
Proximate analysis (%)		
	daf	
Air dried moisture	3.9	-
Volatiles	28.4	35.46
Fixed C	51.7	64.54
Ash	16.0	-
Total	100.0	100.00



Langmuir Isotherm Parameters

Gas adsorbed (desorbable)	Gas adsorbed (total gas)	V_L(abs, daf)
V _L (gauge) = 10.82 m ³ /t	V _L (abs) = 11.18 m ³ /t	12.19
P _L (gauge) = 3121 kPa	P _L (abs) = 3020 kPa	
	Gas content at 1 atm.	0.36 m ³ /t

Abs. Pressure (kPa)	Total adsorbed gas (m ³ /t)
240	0.9
492	1.7
994	2.7
1500	3.6
2014	4.4
2992	5.2
4012	6.4
5975	7.3
8029	8.4

CH4 storage capacity of coal at seam depth (based on isotherm)
5.69 m ³ /t

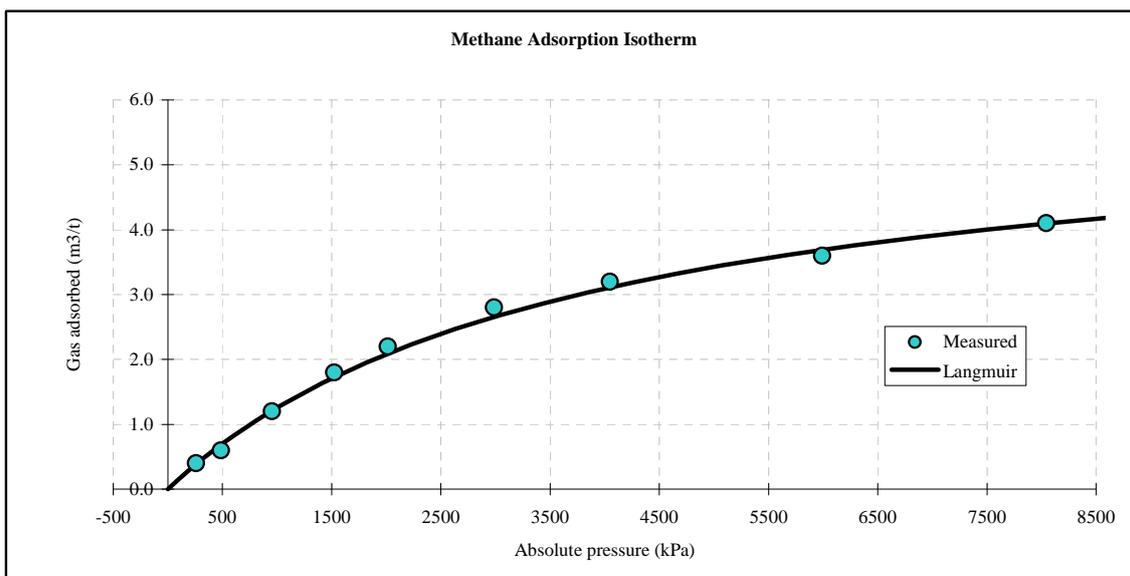
ADSORPTION ISOTHERM AT 25°C

CLIENT: Pure Energy Resources Limited
SAMPLE: Fingal-41B Sample 9
SAMPLE DEPTH: 363.40 m

SEAM: C
REPORT: 1023-06

Isotherm		$C = V_L \cdot P / (P + P_L)$
C: gas content, P: pressure		
V _L and P _L : Langmuir Volume and Pressure		
Gauge pressure (P) kPa	Gas adsorbed (C, m ³ /t) fitted	
0	0.00	
310	0.43	
621	0.81	
1276	1.45	
2551	2.32	
5102	3.33	
6067	3.57	

Coal density		
(He, g/cc)	1.60	
Proximate analysis (%)		
		daf
Air dried moisture	4.8	-
Volatiles	20.0	39.37
Fixed C	30.8	60.63
Ash	44.4	-
Total	100.0	100.00



Langmuir Isotherm Parameters

Gas adsorbed (desorbable)		Gas adsorbed (total gas)	
V _L (gauge) =	5.87 m ³ /t	V _L (abs)=	6.03 m ³ /t
P _L (gauge) =	3901 kPa	P _L (abs)=	3800 kPa
		Gas content at 1 atm.	0.16 m ³ /t
			V _L (abs, daf) 12.19

Abs. Pressure (kPa)	Total adsorbed gas (m ³ /t)
259	0.4
485	0.6
954	1.2
1523	1.8
2015	2.2
2987	2.8
4047	3.2
5991	3.6
8044	4.1

CH4 storage capacity of coal at seam depth (based on isotherm)
2.79 m³/t

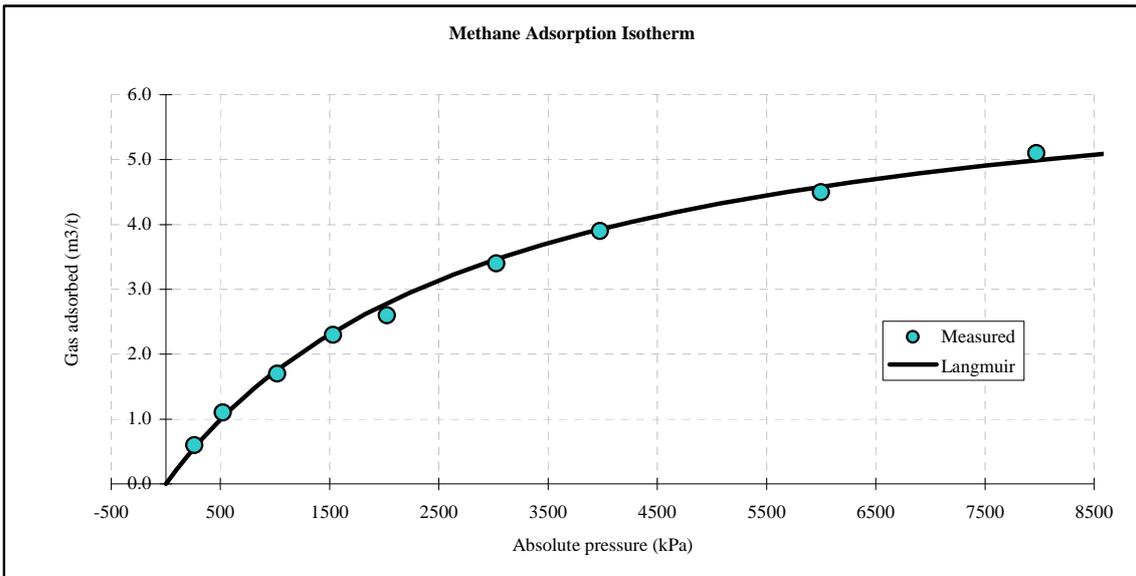
ADSORPTION ISOTHERM AT 26°C

CLIENT: Pure Energy Resources Limited
 SAMPLE: Fingal-41B Sample 10
 SAMPLE DEPTH: 405.00 m

SEAM: D
 REPORT: 1023-06

Isotherm	
$C = V_L \cdot P / (P + P_L)$	
C: gas content, P: pressure	
V _L and P _L : Langmuir Volume and Pressure	
Gauge pressure (P) kPa	Gas adsorbed (C, m ³ /t) fitted
0	0.00
310	0.61
621	1.12
1276	1.95
2551	3.01
5102	4.14
6067	4.40

Coal density		
(He, g/cc)	1.62	
Proximate analysis (%)		
		daf
Air dried moisture	5.4	-
Volatiles	23.9	38.12
Fixed C	38.8	61.88
Ash	31.9	-
Total	100.0	100.00



Langmuir Isotherm Parameters

Gas adsorbed (desorbable)		Gas adsorbed (total gas)	
V _L (gauge) =	6.60 m ³ /t	V _L (abs)=	6.83 m ³ /t
P _L (gauge) =	3041 kPa	P _L (abs)=	2940 kPa
		Gas content at 1 atm.	0.23 m ³ /t
			V_L(abs, daf)
			12.19

Abs. Pressure (kPa)	Total adsorbed gas (m ³ /t)
261	0.6
521	1.1
1021	1.7
1530	2.3
2024	2.6
3025	3.4
3975	3.9
6000	4.5
7972	5.1

CH ₄ storage capacity of coal at seam depth (based on isotherm)
3.73 m ³ /t

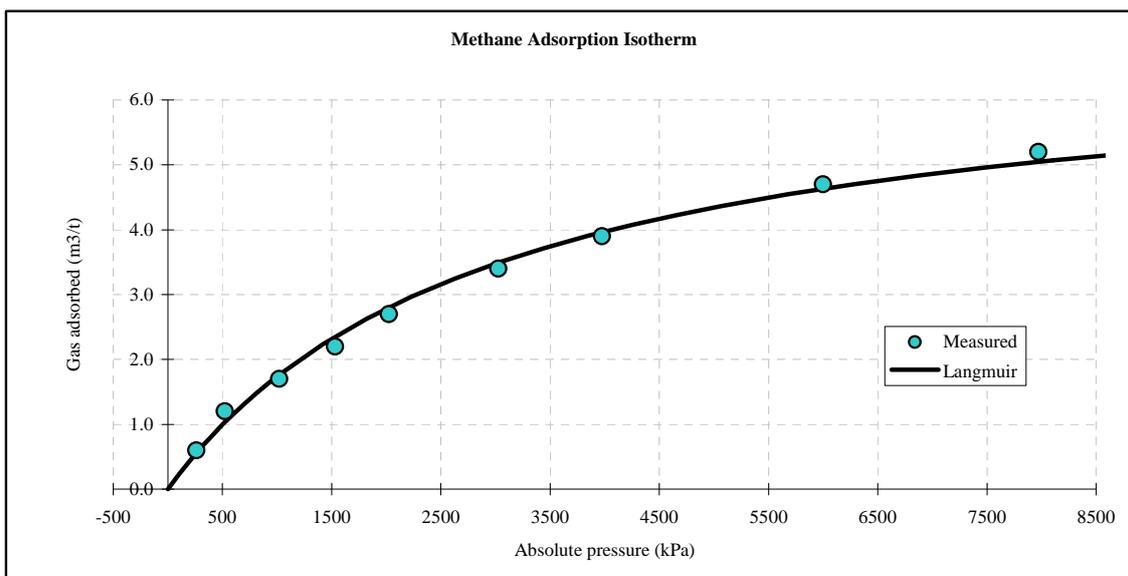
ADSORPTION ISOTHERM AT 26°C

CLIENT: Pure Energy Resources Limited
SAMPLE: Fingal-41B Sample 11
SAMPLE DEPTH: 406.80 m

SEAM: F
REPORT: 1023-06

Isotherm		$C = V_L \cdot P / (P + P_L)$
C: gas content, P: pressure		
V _L and P _L : Langmuir Volume and Pressure		
Gauge pressure (P) kPa	Gas adsorbed (C, m ³ /t) fitted	
0	0.00	
310	0.61	
621	1.12	
1276	1.96	
2551	3.03	
5102	4.18	
6067	4.45	

Coal density		
(He, g/cc)	1.60	
Proximate analysis (%)		
		daf
Air dried moisture	4.3	-
Volatiles	23.3	42.91
Fixed C	31.0	57.09
Ash	41.4	-
Total	100.0	100.00



Langmuir Isotherm Parameters

Gas adsorbed (desorbable)		Gas adsorbed (total gas)	
V _L (gauge) =	6.71 m ³ /t	V _L (abs)=	6.94 m ³ /t
P _L (gauge) =	3091 kPa	P _L (abs)=	2990 kPa
		Gas content at 1 atm.	0.23 m ³ /t
			V _L (abs, daf) 12.19

Abs. Pressure (kPa)	Total adsorbed gas (m ³ /t)
261	0.6
521	1.2
1021	1.7
1530	2.2
2024	2.7
3025	3.4
3975	3.9
6000	4.7
7972	5.2

CH4 storage capacity of coal at seam depth (based on isotherm)
3.77 m ³ /t

CHAPTER 5

CORE SAMPLING TIMESHEET

CBM CORE SAMPLING TIMESHEET

Client:	Pure Energy Resources Limited	Well:	Fingal 41B
Job Number:	1023-06	Start Date:	16/06/2007
Sheet Number:	1	Engineer:	IJM
Start Depth:	266.9m	TD:	293.4m
Cored:	197.6m	Recovered:	196.6m 99%

Daily Summary	16-Jun	20.5	22-Jun	15.0	27-Jun	16.1
	17-Jun	21.0	23-Jun	6.0	28-Jun	9.0
	18-Jun	23.5	24-Jun	14.3	29-Jun	23.9
	21-Jun	13.5	25-Jun	2.4	30-Jun	23.2
			26-Jun	9.2		

Run No.	Top Depth	Bottom Depth	Meters Cored	Meters Recovered	Difference +/-	Time Core Penetrated	Time Core Left Bottom	Time Core Reached Surface	Date
30	266.9	270.0	3.10	3.10	0.00	9:50	10:17	10:19	16-Jun
31	270.0	273.1	3.10	3.10	0.00	10:24	10:53	10:55	16-Jun
32	273.1	276.2	3.10	3.10	0.00	11:02	11:46	11:48	16-Jun
33	276.2	278.2	2.00	2.00	0.00	12:00	12:23	12:25	16-Jun
34	278.2	281.2	3.00	3.00	0.00	12:32	13:29	13:31	16-Jun
35	281.2	281.4	0.20	0.20	0.00	13:42	14:08	14:10	16-Jun
36	281.4	284.4	3.00	3.00	0.00	14:20	15:19	15:21	16-Jun
37	284.4	287.4	3.00	3.00	0.00	15:32	16:33	16:35	16-Jun
38	287.4	290.4	3.00	3.00	0.00	7:15	8:12	8:15	17-Jun
39	290.4	293.4	3.00	3.00	0.00	8:25	8:59	9:01	17-Jun
40	293.4	296.4	3.00	3.00	0.00	9:10	9:37	9:39	17-Jun
41	296.4	299.4	3.00	3.00	0.00	9:49	10:22	10:24	17-Jun
42	299.4	302.4	3.00	3.00	0.00	10:33	11:13	11:16	17-Jun
43	302.4	305.4	3.00	3.00	0.00	11:26	12:05	12:07	17-Jun
44	305.4	308.4	3.00	3.00	0.00	12:17	12:56	12:58	17-Jun
45	308.4	311.1	2.70	2.30	-0.40	9:55	10:34	10:37	18-Jun
46	311.1	313.8	2.70	3.10	0.40	10:50	11:19	11:21	18-Jun
47	313.8	316.8	3.00	3.00	0.00	11:32	12:01	12:04	18-Jun
48	316.8	319.9	3.10	3.10	0.00	12:13	12:41	12:43	18-Jun
49	319.9	322.9	3.00	3.00	0.00	12:53	13:19	13:21	18-Jun
50	322.9	326.0	3.10	3.10	0.00	13:29	13:57	13:59	18-Jun
51	326.0	329.1	3.10	3.10	0.00	14:07	15:06	15:08	18-Jun
52	329.1	331.9	2.80	2.80	0.00	15:19	16:06	16:08	18-Jun
53	331.9	333.4	1.50	1.75	0.25	11:00	11:51	11:54	21-Jun
54	333.4	336.4	3.00	2.70	-0.30	12:07	13:46	13:49	21-Jun
55	336.4	339.4	3.00	3.00	0.00	13:57	14:53	14:56	21-Jun
56	339.4	342.4	3.00	2.85	-0.15	15:06	15:45	15:47	21-Jun
57	342.4	345.4	3.00	3.05	0.05	15:57	16:23	16:25	21-Jun
58	345.4	348.4	3.00	3.00	0.00	7:57	8:45	8:48	22-Jun
59	348.4	351.4	3.00	2.93	-0.07	9:34	10:00	10:02	22-Jun
60	351.4	354.4	3.00	2.90	-0.10	10:13	10:48	10:51	22-Jun
61	354.4	356.3	1.90	2.00	0.10	11:01	12:43	12:47	22-Jun
62	356.3	357.4	1.10	0.80	-0.30	14:36	15:21	15:24	22-Jun
63	357.4	360.4	3.00	3.15	0.15	15:41	17:09	17:12	22-Jun
64	360.4	363.4	3.00	3.00	0.00	10:35	11:39	11:44	23-Jun
65	363.4	366.4	3.00	3.10	0.10	12:17	13:18	13:24	23-Jun
66	366.4	369.4	3.00	2.95	-0.05	9:55	10:53	10:57	24-Jun

CBM CORE SAMPLING TIMESHEET

Client:	Pure Energy Resources Limited	Well:	Fingal 41B
Job Number:	1023-06	Start Date:	16/06/2007
Sheet Number:	2	Engineer:	IJM
Start Depth:	266.9m	TD:	293.4m
Cored:	197.6m	Recovered:	196.6m 99%

Run No.	Top Depth	Bottom Depth	Meters Cored	Meters Recovered	Difference +/-	Time Core Penetrated	Time Core Left Bottom	Time Core Reached Surface	Date
67	369.4	372.4	3.00	3.00	0.00	12:07	13:04	13:08	24-Jun
68	372.4	375.4	3.00	3.00	0.00	13:23	13:54	13:58	24-Jun
69	375.4	378.4	3.00	3.00	0.00	14:37	15:13	15:18	24-Jun
70	378.4	380.7	2.30	1.90	-0.40	15:43	16:40	16:45	24-Jun
71	380.7	381.4	0.70	0.40	-0.30	8:41	9:44	9:47	25-Jun
72	381.4	383.1	1.70	1.70	0.00	15:38	16:29	16:33	25-Jun
73	383.1	384.4	1.30	1.10	-0.20	9:38	10:10	10:15	26-Jun
74	384.40	387.40	3.00	3.00	0.00	10:30	11:45	11:53	26-Jun
75	387.40	390.60	3.20	3.30	0.10	12:02	12:40	14:49	26-Jun
76	390.60	392.30	1.70	1.70	0.00	15:03	15:35	15:40	26-Jun
77	392.30	395.40	3.10	2.30	-0.80	10:00	10:41	10:45	27-Jun
78	395.40	396.40	1.00	1.80	0.80	10:55	11:24	11:27	27-Jun
79	396.40	399.40	3.00	3.00	0.00	11:40	12:20	12:25	27-Jun
80	399.40	402.40	3.00	3.00	0.00	12:50	13:23	13:27	27-Jun
81	402.40	405.00	2.60	2.65	0.05	13:40	14:07	14:13	27-Jun
82	405.00	407.85	2.85	2.85	0.00	14:53	15:34	15:39	27-Jun
83	407.85	408.40	0.55	0.60	0.05	15:49	16:11	16:14	27-Jun
84	408.40	409.10	0.70	0.65	-0.05	8:46	9:41	9:44	28-Jun
85	409.10	411.40	2.30	2.40	0.10	9:56	10:42	10:45	28-Jun
86	411.40	414.40	3.00	3.00	0.00	10:56	11:29	11:33	28-Jun
87	414.40	417.40	3.00	3.00	0.00	11:45	12:43	12:47	28-Jun
88	417.40	420.40	3.00	3.00	0.00	8:57	9:37	9:40	29-Jun
89	420.40	423.40	3.00	3.00	0.00	9:52	10:38	10:42	29-Jun
90	423.40	426.40	3.00	3.00	0.00	10:52	11:35	11:39	29-Jun
91	426.40	429.40	3.00	3.00	0.00	11:47	12:41	12:45	29-Jun
92	429.40	432.40	3.00	3.00	0.00	12:56	13:30	13:34	29-Jun
93	432.40	435.40	3.00	3.00	0.00	13:44	14:13	14:16	29-Jun
94	435.40	438.40	3.00	3.00	0.00	14:29	14:59	15:05	29-Jun
95	438.40	441.30	2.90	2.65	-0.25	15:14	16:15	16:19	29-Jun
96	441.30	444.40	3.10	3.10	0.00	7:45	8:52	9:46	30-Jun
97	444.40	447.40	3.00	3.10	0.10	10:00	10:49	10:53	30-Jun
98	447.40	450.40	3.00	3.10	0.10	11:06	11:51	11:56	30-Jun
99	450.40	453.40	3.00	3.00	0.00	12:10	13:06	13:11	30-Jun
100	453.40	455.50	2.10	2.10	0.00	13:20	14:05	14:09	30-Jun
101	455.50	458.50	3.00	3.00	0.00	14:19	15:03	15:07	30-Jun
102	458.50	461.50	3.00	3.00	0.00	15:17	15:56	15:59	30-Jun
103	461.50	464.50	3.00	3.00	0.00	16:10	16:57	17:01	30-Jun

APPENDIX 1

CORE PHOTOGRAPHY

281.75m

297.07m

304.40m

305.40m

328.10m



GREY SCALE



COLOUR REFERENCE



329.80m

355.70m

356.50m

363.40m

405.00m



GREY SCALE



COLOUR REFERENCE



406.80m

453.65m

462.58m



GREY SCALE



COLOUR REFERENCE

