

COAL BANK SAMPLE

COAL: GASCOIGNE WOOD (SELBY)

GRADE: SINGLES

SEAM: BARNLSLEY

BCC COAL RANK CODE: N/A

ECE / ISO CLASSIFICATION: N/A

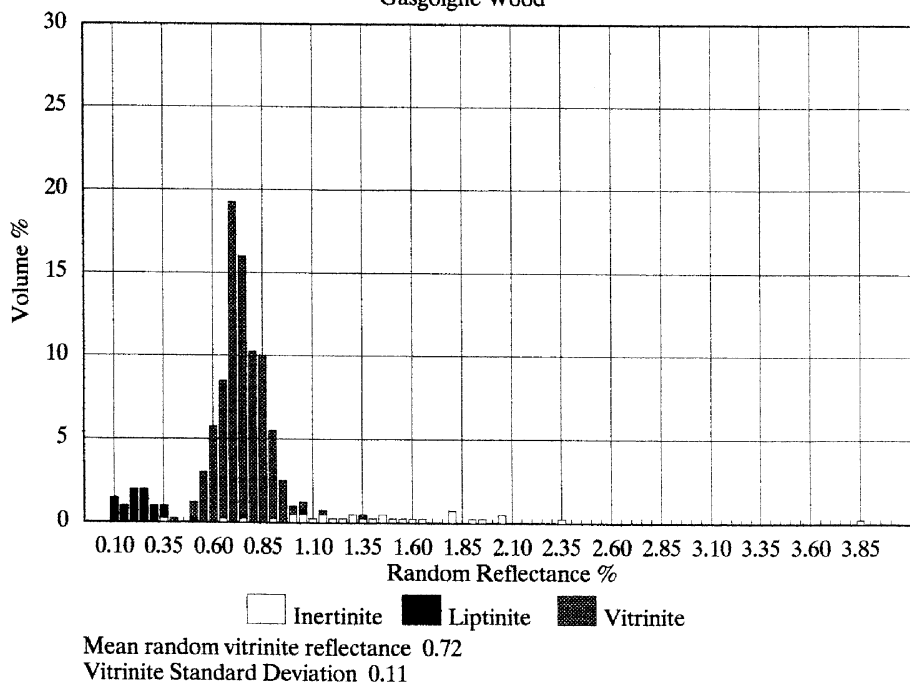
PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	3.8	Carbon (dmmf)	84.5	Na ₂ O	1.6
Ash	20.4	Hydrogen (dmmf)	4.9	K ₂ O	4.0
Volatile matter	28.3	Oxygen (dmmf)	7.7	CaO	2.5
Fixed carbon	47.5	Nitrogen (dmmf)	1.83	MgO	1.6
Volatile matter (dmmf)	38.7			Fe ₂ O ₃	7.2
				Al ₂ O ₃	24.9
		Organic sulphur (db)	0.76	SiO ₂	55.4
		Sulphate as S (db)	<0.1	SO ₃	2.1
		Pyritic sulphur as S (db)	0.56	TiO ₂	0.9
				Mn ₃ O ₄	<0.1
				P ₂ O ₅	0.2
		Chlorine (db)	0.39		
		Carbon dioxide (db)	0.55		
		Mineral matter (db)	24.05		
CAKING PROPERTIES		MACERAL ANALYSIS (% by volume, mmf)			
Swelling Index	2.5	Vitrinite	82		
Gray-King Coke Type	C	Exinite	9		
		Inertinite	9		
CALORIFIC VALUE					
kJ / kg (daf)	33800				
ASH FUSION RANGE (°C) *					
Deformation temp.	1180				
Hemisphere temp.	1350				
Flow temp.	1380				

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

ad: as analysed
 db: dry basis
 daf: dry, ash free
 dmmf: dry, mineral matter free
 mmf: mineral matter free

This analysis is typical of this specially selected sample, but there may be slight variations between the data given above and that of the actual sample supplied.

INTERACTIVE REFLECTANCE HISTOGRAM
 Gasgoigne Wood



COAL BANK SAMPLE

COAL:THORESBY

GRADE:SINGLES

SEAM:PARKGATE

BCC COAL RANK CODE:502

ECE / ISO CLASSIFICATION:634

PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)	
Moisture	5.6	Carbon (dmmf)	84.3	Na ₂ O	5.9
Ash	4.9	Hydrogen (dmmf)	4.6	K ₂ O	1.4
Volatile matter	34.2	Oxygen (dmmf)	7.9	CaO	3.3
Fixed carbon	55.3	Nitrogen (dmmf)	1.83	MgO	0.7
Volatile matter (dmmf)	38.7			Fe ₂ O ₃	26.3
				Al ₂ O ₃	23.8
HARDGROVE INDEX	46	Organic sulphur (db)	1.12	SiO ₂	34.3
		Sulphate as S (db)	<0.1	SO ₃	3.1
CAKING PROPERTIES		Pyritic sulphur as S (db)	0.91	TiO ₂	0.9
Swelling Index	5.5			Mn ₂ O ₄	<0.2
Gray-King Coke Type	G5	Chlorine (db)	0.67	P ₂ O ₅	<0.2
		Carbon dioxide (db)	0.10		
		Mineral matter (db)	6.48		
CALORIFIC VALUE		MACERAL ANALYSIS			
kJ / kg (daf)	34680	(% by volume , mmmf)			
		Vitrinite	82		
		Exinite	7		
		Inertinite	11		
ASH FUSION RANGE (°C) *					
Deformation temp.	1060				
Hemisphere temp.	1090				
Flow temp.	1220				

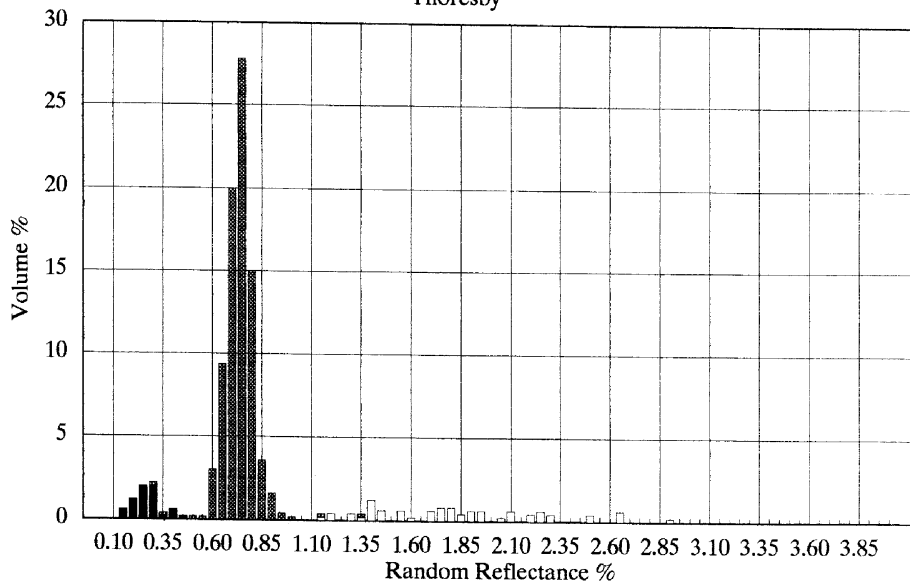
*Test atmosphere: reducing (50% CO₂ / 50% H₂)

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daf: dry, ash free
dmmf: dry, mineral matter free
mmf: mineral matter free

APPENDIX 18B

INTERACTIVE REFLECTANCE HISTOGRAM
Thoresby



□ Inertinite ■ Liptinite ▨ Vitrinite

Mean random vitrinite reflectance 0.71
Vitrinite Standard Deviation 0.08

COAL BANK SAMPLE

COAL: HUNTER VALLEY

GRADE: SMALLS

BCC COAL RANK CODE: N/A

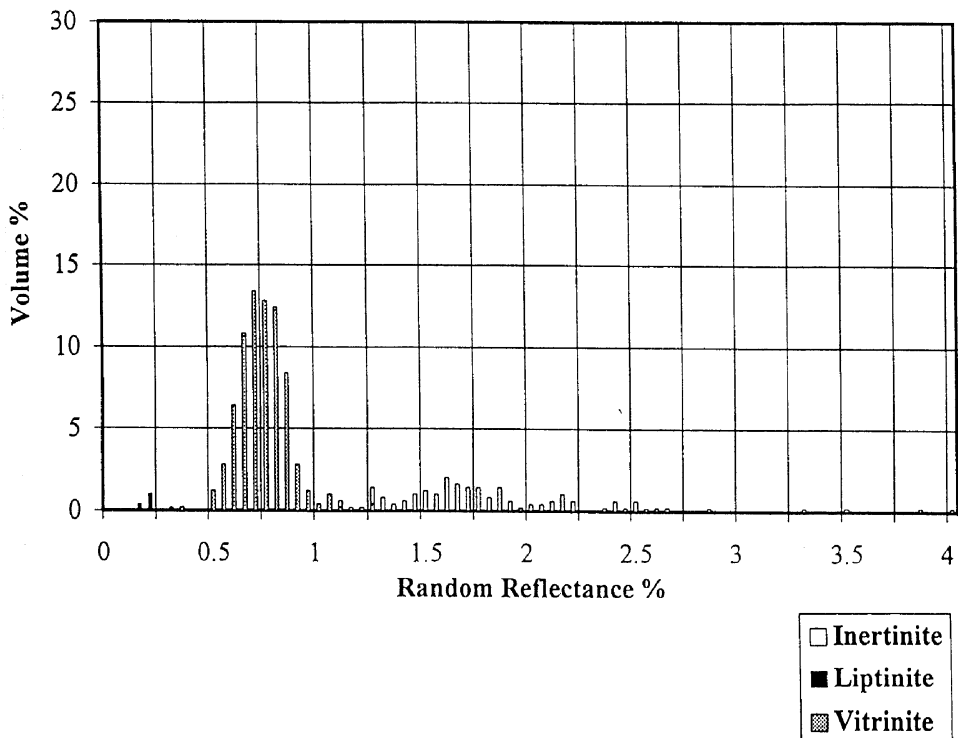
PROXIMATE ANALYSIS (% a.d.)		ULTIMATE ANALYSIS (%)		ASH ANALYSIS (% on ash)		
Loss on Ignition (db)	87.7	Carbon (dmmf)	84.19	Na2O	0.3	
Moisture	3.2	Hydrogen (dmmf)	5.49	K2O	1.4	ASH FUSION RANGE
Ash	11.9	Oxygen (dmmf)	9.2	CaO	0.6	(Deg.C)
Volatile matter	30.4	Total Nitrogen (dmmf)	1.86	MgO	0.6	Reducing atmosphere
Fixed carbon	54.5	Total Sulphur (db)	0.45	Fe2O3	8.1	(50% CO2 / 50% H2)
Volatile matter (dmmf)	36.3	Chlorine (db)	0.03	Al2O3	15.8	Deformation temp. 1120
		Mineral matter (db)	13.49	SiO2	71.8	Hemisphere temp. 1310
HARDGROVE INDEX	53	Carbon dioxide (db)	0.13	TiO2	0.7	Flow temp. 1340
		Forms of Sulphur		SO3	0.5	
CAKING PROPERTIES		Organic Sulphur (db)	0.41	P2O5	<0.1	Oxidising atmosphere
Swelling Index	1	Sulphate as S (db)	0.01	Mn3O4	<0.1	
Gray-King Coke Type	C	Pyritic Sulphur as S (db)	0.03			Deformation temp. >1500
		Forms of Nitrogen*				Hemisphere temp. >1500
MACERAL ANALYSIS		Pyridinic Nitrogen (%)	30			Flow temp. >1500
(% by volume, mmf)		Pyrolic Nitrogen (%)	48	KEY		
Vitrinite	74.0	Quaternary Nitrogen (%)	22	ad:	as analysed	
Liptinite	2.60			db:	dry basis	
Inertinite	23.4	CALORIFIC VALUE		daf:	dry, ash free	
Mean Random Vitrinite Reflectance	0.71	kJ / kg (db)	29460	dmmf:	dry, mineral matter free	
Vitrinite Reflectance Standard Deviation	0.11	kJ / kg (daf)	33720	mmf:	mineral matter free	

This analysis is typical of the selected sample but there may be slight variations between the data given and that of actual samples supplied.

* It is generally accepted that <10% of coal-N is bound in amino groups and that the inclusion of amino-N tends to make the fit worse when resolving N Is spectra. Where two sets of "Forms of Nitrogen" values have been given (the second set in brackets), the spectral curve fitting is inconclusive.

APPENDIX 19B

INTERACTIVE REFLECTANCE HISTOGRAM
HUNTER VALLEY COAL



COAL BANK SAMPLE

COAL: ELLINGTON

GRADE: SINGLES

SEAM:

BCC COAL RANK CODE: 702

ECE / ISO CLASSIFICATION: 732

PROXIMATE ANALYSIS

(% a.d.)	
Moisture	5.9
Ash	3.2
Volatile matter	34.0
Fixed carbon	56.9
Volatile matter (dmmf)	37.6

CAKING PROPERTIES

Swelling Index	5.5
Gray-King Coke Type	G

CALORIFIC VALUE

kJ / kg (daf)	34400
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ASH FUSION RANGE (°C) *

Deformation temp.	>1500
Hemisphere temp.	>1500
Flow temp.	>1500

ULTIMATE ANALYSIS (%)

Carbon (dmmf)	83.7
Hydrogen (dmmf)	5.3
Oxygen (dmmf)	8.0
Nitrogen (dmmf)	1.99

Organic sulphur (db)	0.79
Sulphate as S (db)	0.00
Pyritic sulphur as S (db)	0.09

Chlorine (db)	0.08
Carbon dioxide (db)	0.06
Mineral matter (db)	3.89

MACERAL ANALYSIS

(% by volume, mmf)	
Vitrinite	76
Exinite	6
Inertinite	17

ASH ANALYSIS

(% on ash)	
Na ₂ O	0.7
K ₂ O	0.8
CaO	3.6
MgO	1.3
Fe ₂ O ₃	6.5
Al ₂ O ₃	34.1
SiO ₂	47.8
SO ₃	2.0
TiO ₂	1.2
Mn ₃ O ₄	<0.1
P ₂ O ₅	0.4

*Test atmosphere: reducing (50% CO₂ / 50% H₂)

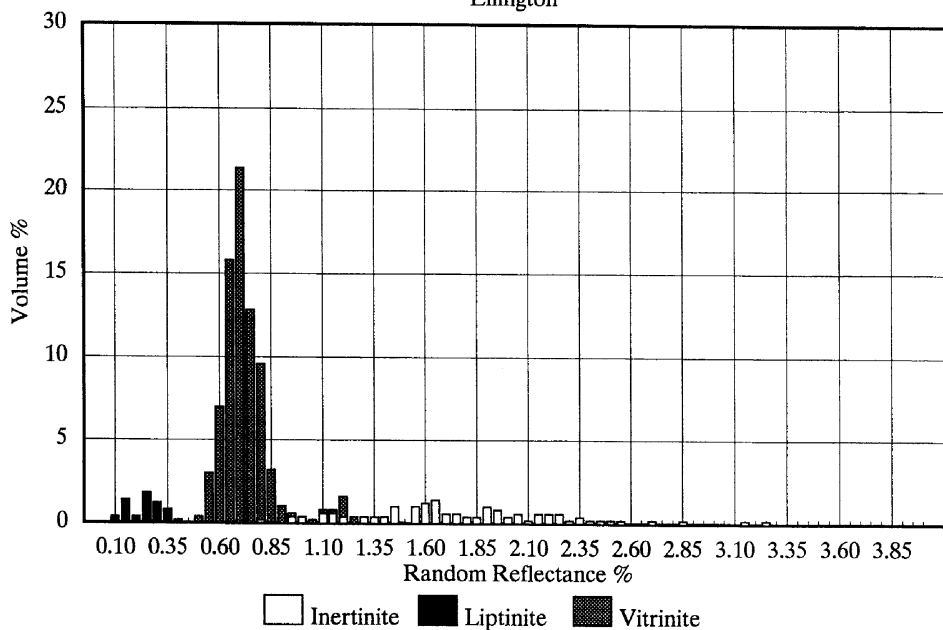
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APPENDIX 20B

INTERACTIVE REFLECTANCE HISTOGRAM

Ellington



Mean random vitrinite reflectance 0.69
 Vitrinite Standard Deviation 0.11