ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

SOUTHEAST GIPPSLAND BASIN VITRINITE REFLECTANCE AND MACERAL ANALYSIS, HERMES-1, ANGLER-1 & ANEMONE-1A

Esso Australia Ltd

Chris Jenkins
October 1994

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CCJ:aw:94misc60

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INTRODUCTION

Approval to inspect and sample drill cuttings was obtained from the General Manager, Petroleum Operations on 10 May 1994. A total of 12 samples of drill cuttings from the Hermes-1, Angler-1 and Anemone-1A wells were collected from the Department of Energy and Minerals sample store. The samples were dispatched to Keiraville Konsultants for detailed coal maceral descriptions and vitrinite reflectance (Rv max) analyses. The raw data is included in Enclosure 1.

SAMPLES

Cuttings were selected according to abundance of coal, to ensure adequate vitrinite for measurement of accurate Rv max data (Table 1). Existing data were mainly from SWC shot in mudstones and it was suspected that organic facies variations may occur from mudstone to coal lithologies, resulting in a range in Rv max. In order to calibrate thermal models (for each well) based on vitrinite kinetic parameters, it was necessary to sample coal-rich cuttings.

RESULTS

Maceral descriptions for each sample from Hermes-1, Angler-1 and Anemone-1A are summarised in Figures 1, 2 and 3 respectively. The maceral subdivision on the figure is derived from Esso and Fina wells and published data from Smith and Cook (1984), Cook and Struckmeyer (1985) and Hong-Yul Kim (1987). Each sample is subdivided into coal, shaly coal and dispersed organic matter (DOM) components. A feature of the coal and shaly coal is abundant vitrinite commonly > 95%, with only minor inertinite. Liptinite contents vary from <1% up to 8.5%. Within the DOM, the inertinite content is higher at the expense of the vitrinite component. These samples fit within the range of maceral distribution for the Gippsland Basin.

Vitrinite reflectance data for this study as well as previous analyses are shown for Hermes-1, Angler-1 and Anemone-1A wells in Figures 4, 5 and 6 respectively. Also shown for each well is the modelled thermal maturity. Previous Rv max analyses for each well were performed by a variety of analysts including Cook, AMDEL and Phillips Petroleum Company. For Hermes-1, a wide variation in Rv max was apparent (>0.2%) from data recorded by Phillips in 1983 and recent data by Cook in 1994. This probably results from different analytical methods used by Phillips and Cook. The variation between data from Cook in 1986 and 1994 was less (about 0.1%) and may represent a difference in organic facies between the coal-rich versus mudstone samples (Cook, Pers. Comm.). It is probably not an artifact as the samples were processed using the same methods and analyst.

Modelled maturity in Hermes-1 is slightly less than the trend derived from samples analysed by Cook in 1986 but is greater than the Phillips Rv max trend. Further calibration of the Hermes-1 thermal model may be necessary as it currently under-estimates maturity, according to the measured vitrinite reflectance data. For the Angler-1 and Anemone-1A wells, data from Cook and AMDEL were in reasonable agreement and generally fit the modelled maturity data, although some scatter in measured reflectance is apparent for Rv max <0.5%.

REFERENCES

Cook, A.C. and Struckmeyer, H., 1985: The role of Coal as a Source Rock for Oil In: The Second Southeast Australian Oil Exploration Symposium, Petroleum Exploration Society of Australia. Edited by Glenie, R.C., pp 419 - 433.

Hong-Yul Kim, 1987: Unpublished Ph.D. Thesis from the University of Woollongong.

Smith, G.C. and Cook, A.C., 1984: Petroleum Occurrence in the Gippsland Basin and its Relationship to Rank and Organic Matter Type In: Australian Petroleum Exploration Association, Journal 24, pp 196 - 216.

Gippsland Basin - Maceral Types
Latrobe and Golden Beach Groups

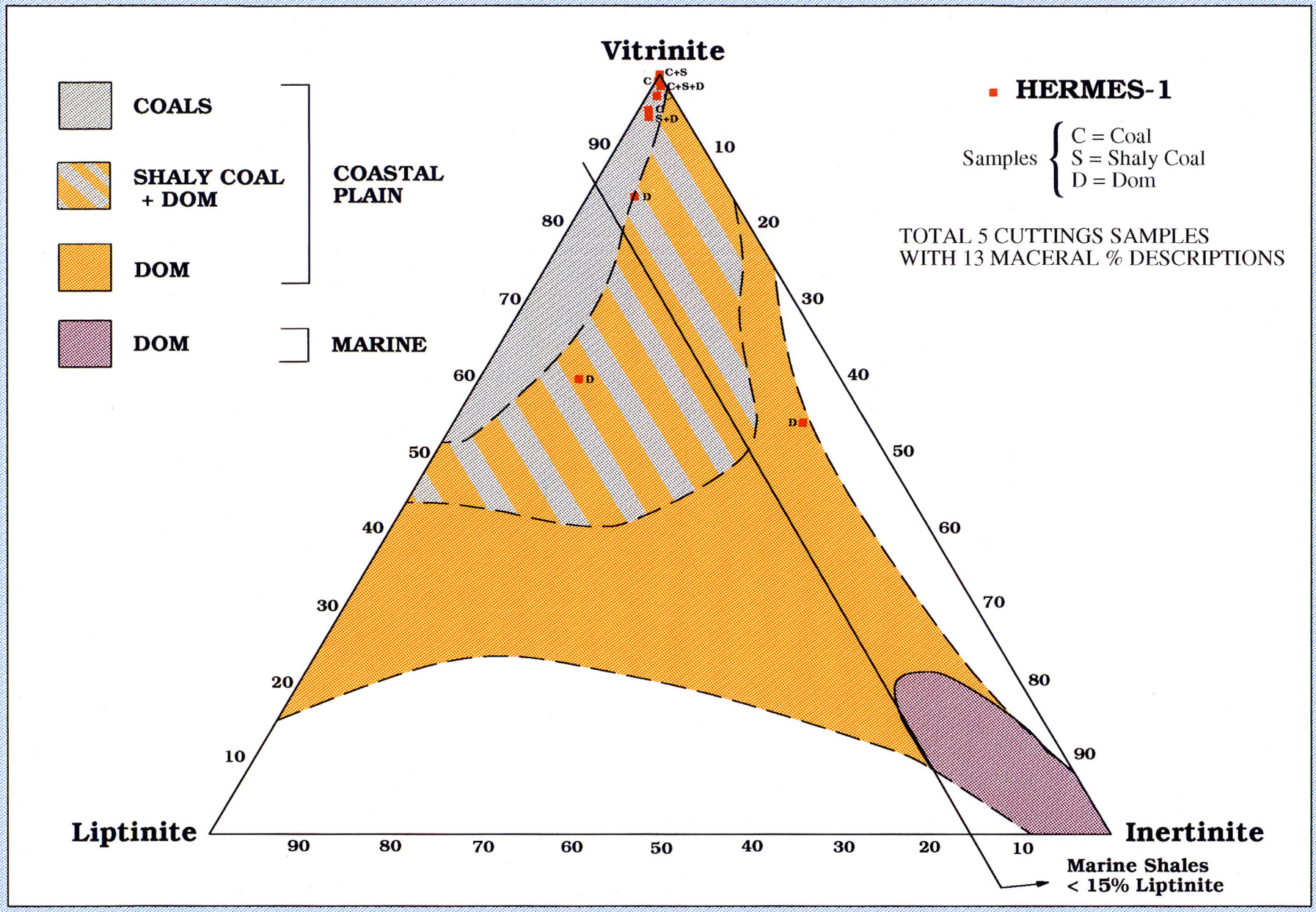

FIGURE 1

Gippsland Basin - Maceral Types
Latrobe and Golden Beach Groups

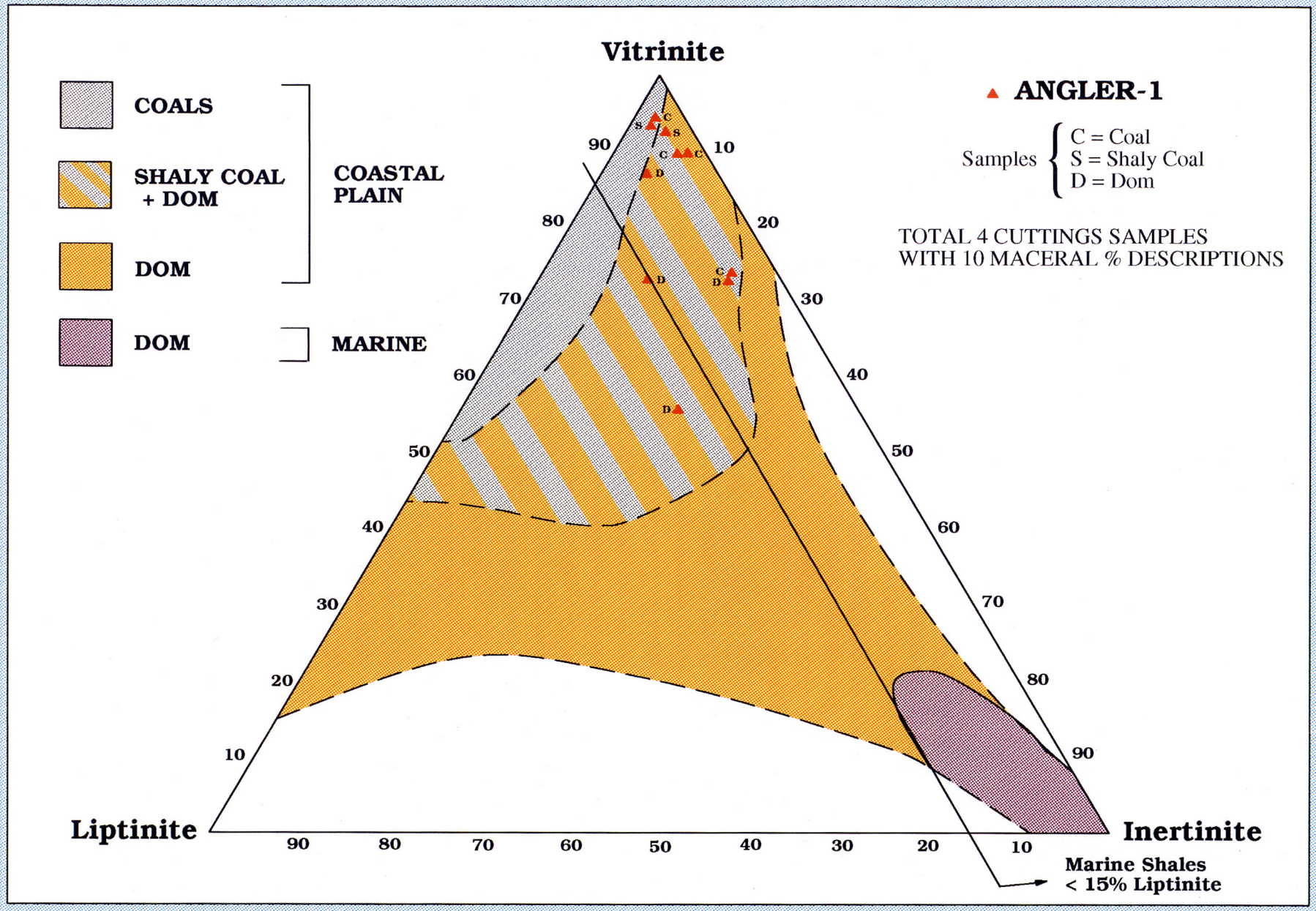

FIGURE 2

Gippsland Basin - Maceral Types
Latrobe and Golden Beach Groups

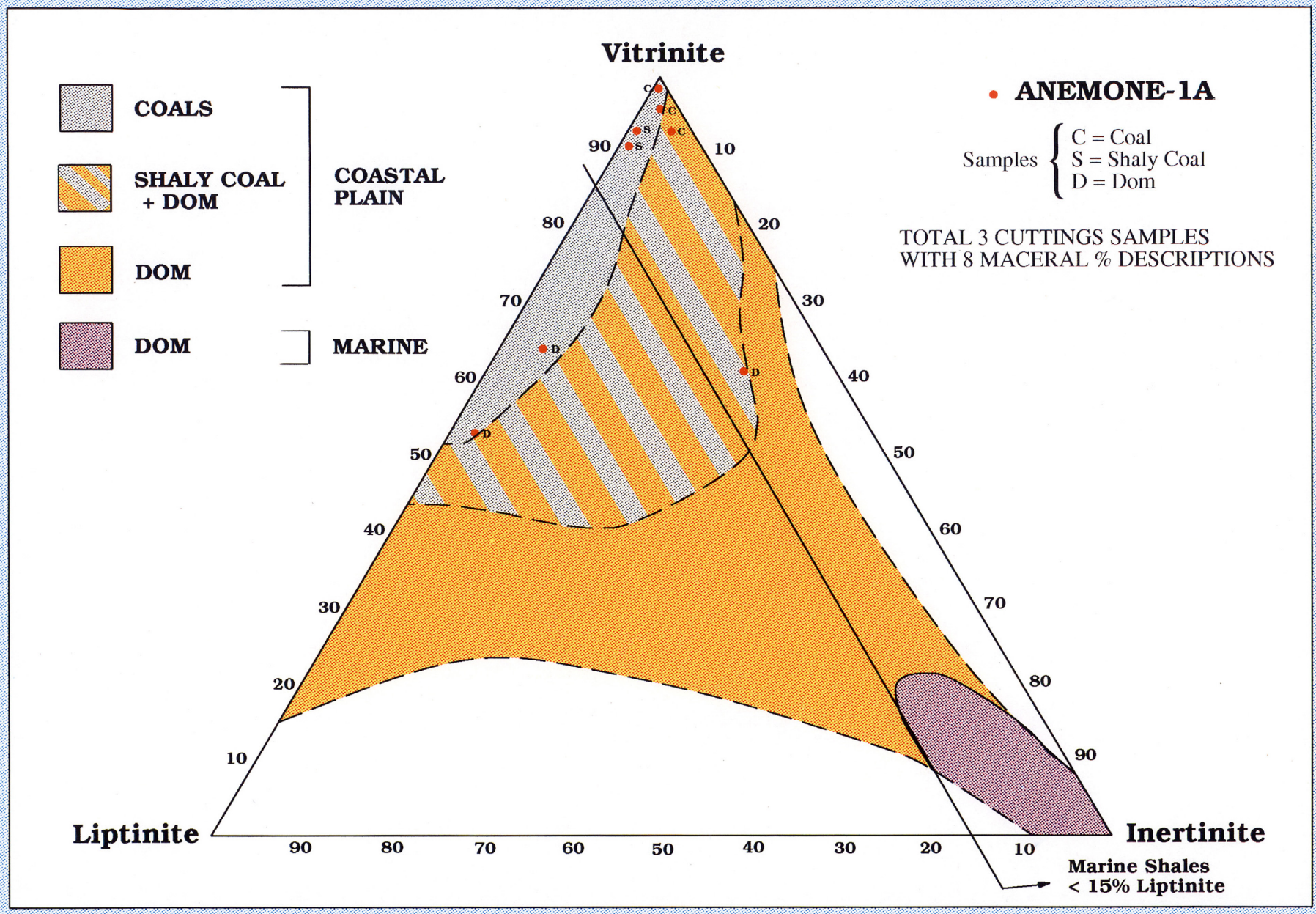

FIGURE 3

HERMES 1 (PHILLIPS,1983)

VITRINITE REFLECTANCE DATA

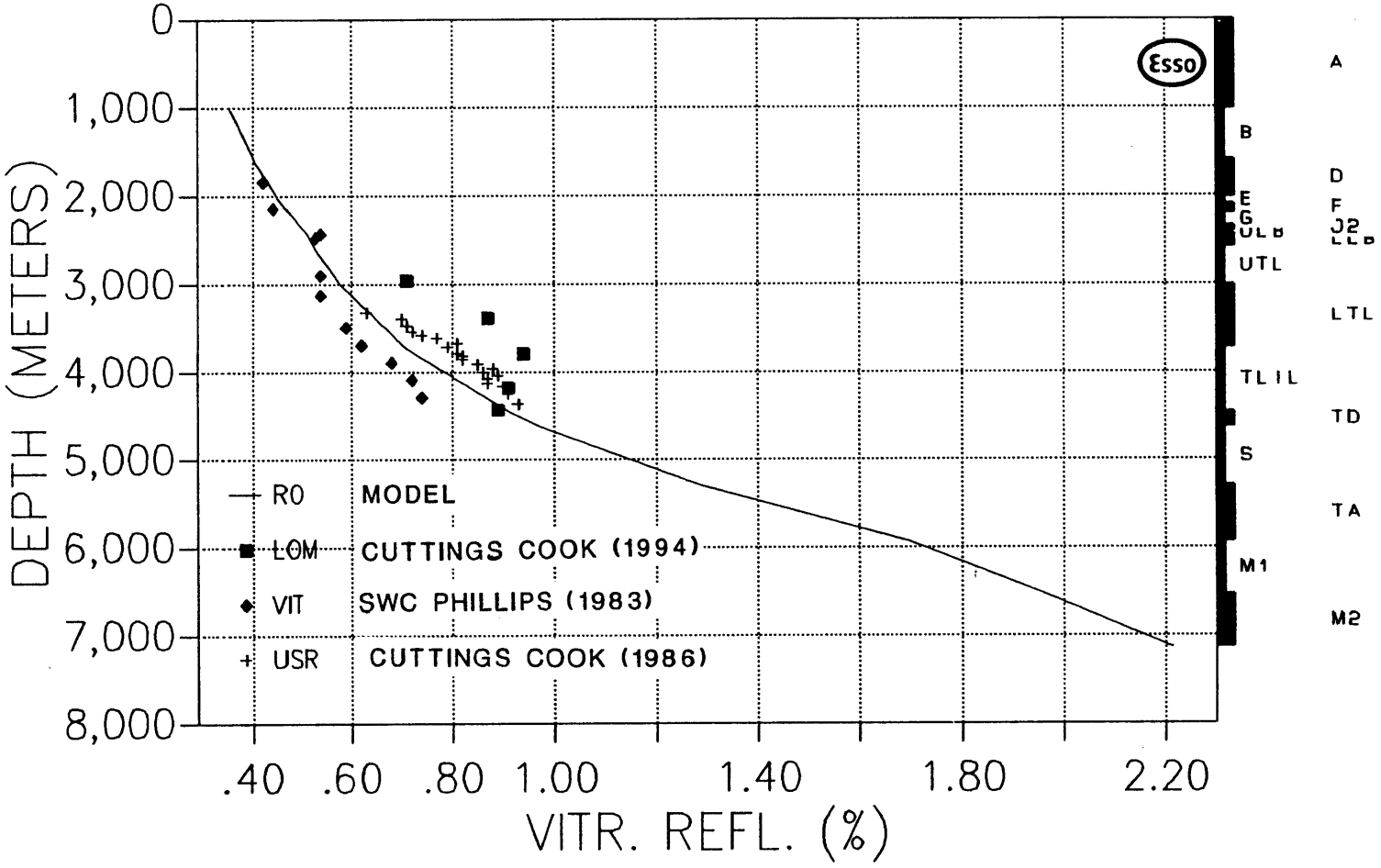

FIGURE 4

ANGLER–1 (FINA,1989)

VITRINITE REFLECTANCE DATA

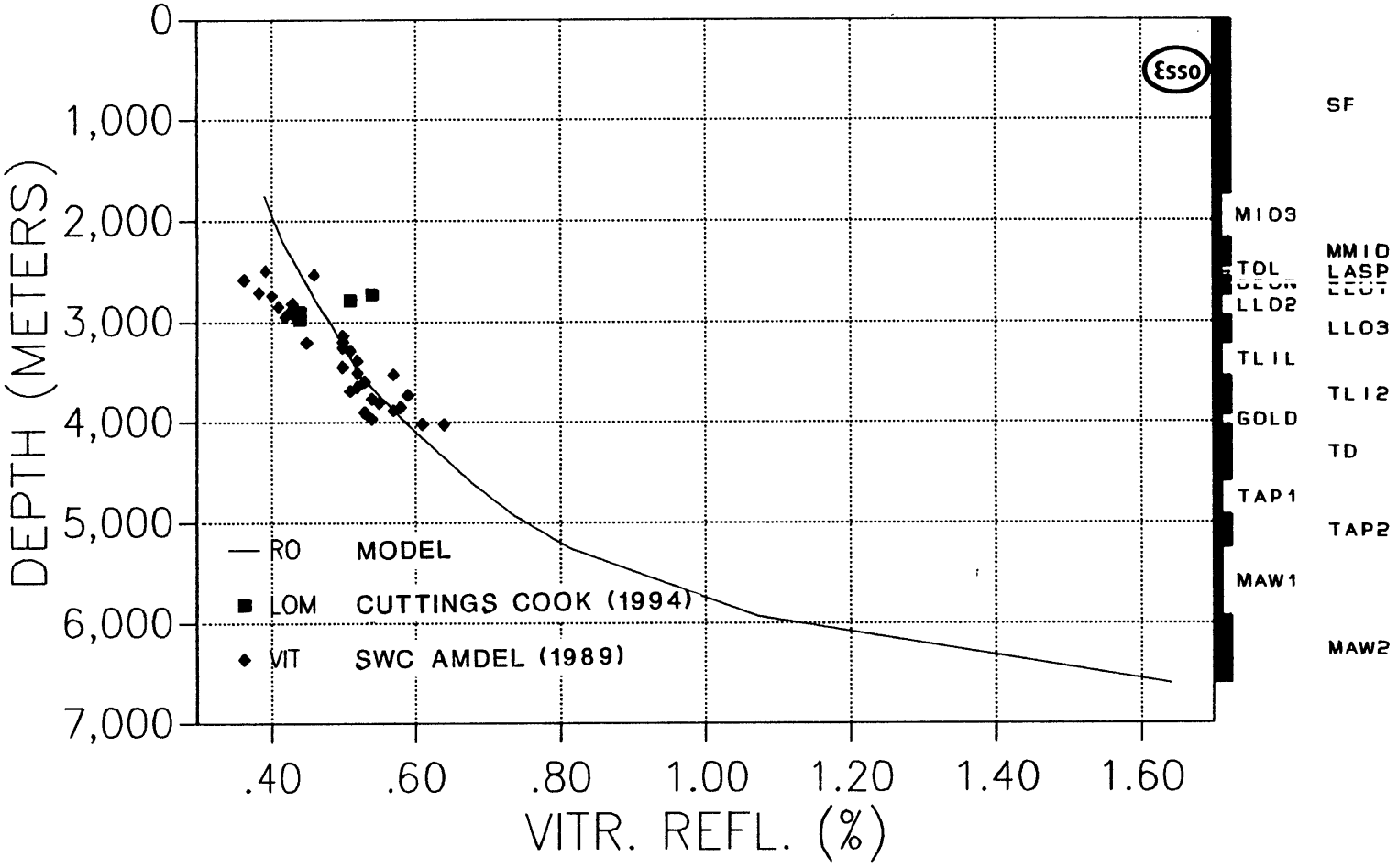

FIGURE 5

ANEMONE-1A (FINA,1989)

VITRINITE REFLECTANCE DATA

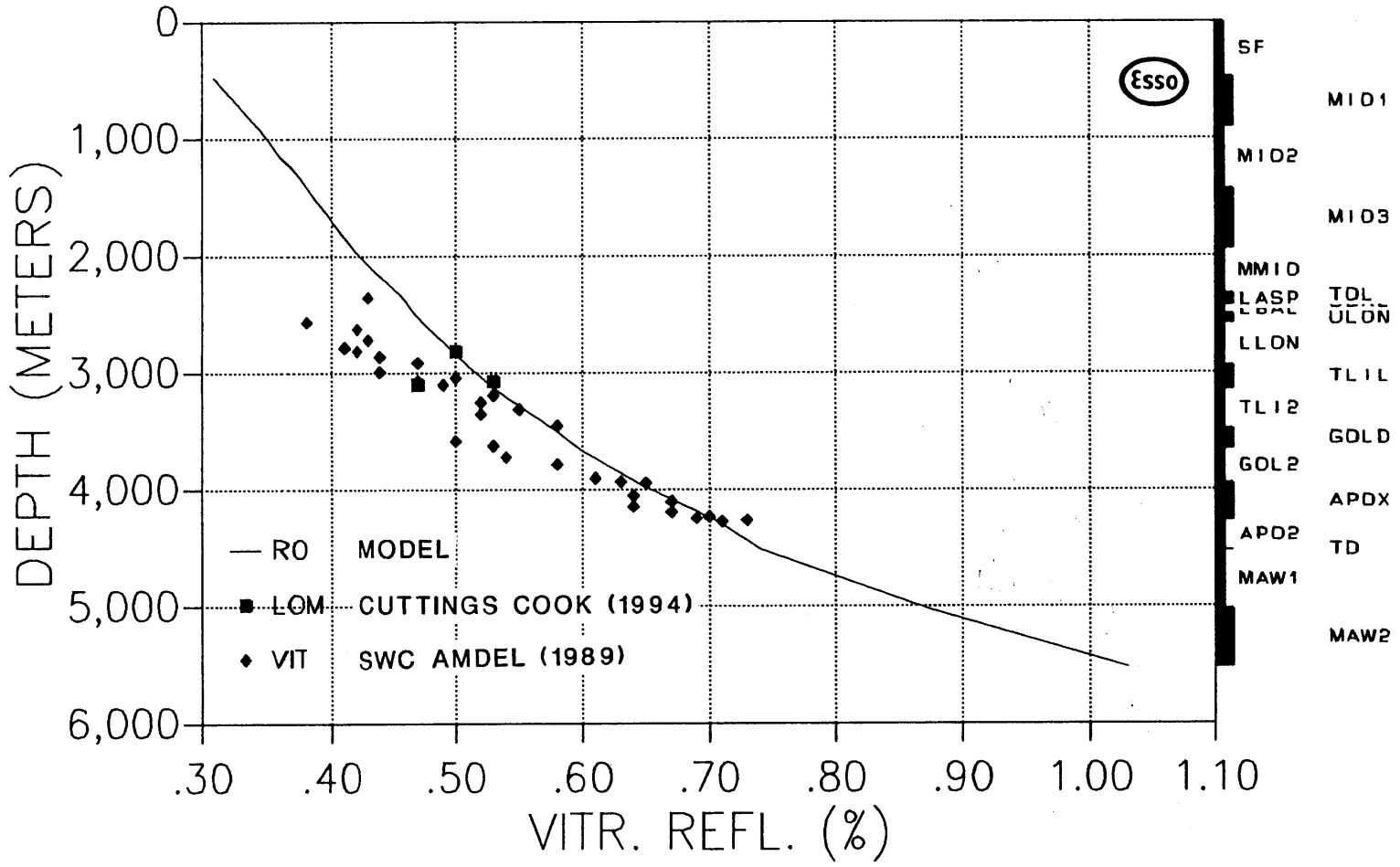

FIGURE 6

TABLE 1

SAMPLE PROGRAMME

(ALL DEPTHS IN METRES KB)

HERMES-1	ANEMONE-1/1A	ANGLER-1
3065 - 3070	3070 - 3075	3025 - 3030
3490 - 3495	3330 - 3335	3085 - 3090
3900 - 3905	3355 - 3360	3205 - 3210
4285 - 4290		3275 - 3280
4540 - 4545		

ENCLOSURE 1

VITRINITE REFLECTANCE AND MACEREL DESCRIPTIONS FOR HERMES-1, ANGLER-1 AND ANEMONE-1A

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1 June 1994

CONTRACT NUMBER 00262540/01

Dear Chris

Please find enclosed results for Hermes-1 v9426-9430, Anemone-1 v9431-9433 and Angler-1 v9434-9437. An account is included on invoice # 2136.

A note is provided on one of the sheets commenting on the data. As I thought, the data we got this time were indeed very similar to the earlier results and we have plotted both sets of data on one plot. The new data tend to be low at shallow depths but converge at depth. The differences may be a function of the pick for cavings and, in turn, that would be a function of abundance of coals. We probably had a better chance of coal rich samples back in 1986 than now so I would tend to lean to the earlier data where they differ. The shallowest of the Phillips data are probably close but in the deeper section they are way too low even allowing for our data being Rmax and theirs being Rrandom. It is possible that the cause of the difference is the different facies sampled. Except for the deepest Hermes sample, our data are strongly biased to coals.

I attach a table showing comparisons of three coals and shales sampled from three cores in the N Sea Jurassic. The samples were part of a ring exercise sent out by Pradier of Elf A to members of ICCP Comm II.

Yours sincerely

per A Williams.

Alan Cook

Notes on samples from Hermes, Angler and Anemone.

Angler and Anemone samples typically contain abundant pyrite and differ from most Eastern View facies coals in the abundance of pyrite. Some of the samples appear to contain a high proportion of lithologies that represent rootlet beds and are similar in texture to the mangrove/Nipa facies seen in tropical regions. It is suggested that an equivalent facies was present during the deposition of some of these successions. Where pyrite is abundant, vitrinite reflectances tend to be below trend for coals that lack pyrite, typically by 0.05 to 0.1%. However, the effect is most closely related to organic sulphur rather than pyritic sulphur so that petrographic observations indicate that the effect may be present rather than give an exact measure of the extent of the effect.

None of the samples shows oxidised rims consistent with heat alteration of the samples during preparation or storage. Some of the Anemone and Angler coal grains show cracks around the margins that may be indicative of desiccation rather than high temperature oxidation. Some low temperature oxidation has probably occurred but this is not detectable by petrographic methods. The presence of desiccation structures indicates that care should be taken in interpreting chemical data because this will probably have been influenced by the oxidation.

The high values from Hermes are not due to sample heating during collection or preparation. However, liptinite is rare, limited evidence suggests that bireflectance is below normal for coals of the ranks found and polishing hardness is anomalously high. These properties are all consistent with contact alteration by an igneous intrusion. Some indication of the timing of intrusion can be given. The coals are texturally mature and it is probable that the heating event did not occur until the coals had a cover of 2+ km. If coal from closer to an igneous contact could be obtained it would be possible to determine the reflectance at the time of the intrusion more accurately, but the evidence from the current suite suggests that regional rank had already reached a level of $R_v max$ = 0.45%+.

COAL A - v7716

KEIRAVILLE KONSULTANTS - SUMMARY SHEET

OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	**20.8**	8.3	12.5	**43.2**	**2.3**	1.5	0.4	0.4	-	tr	33.7	33.6	0.1	0..81	0.81	**0.81**
B																
H	**20.3**	7.5	12.8	**40.4**	**3.1**	1.6	0.3	0.9	-	0.3	36.2	36.2	tr	0.78	0.74	**0.77**
M	**24.7**	7.5	17.2	**40.3**	**2.6**	1.8	0.2	0.6	-	tr	32.4	32.4	tr	0.81	0.74	**0.78**
MEAN	**21.9**			**41.3**	**2.7**						34.1			0.80	0.76	**0.79**

SHALE A - v7713

OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	**2.6**	0.8	1.8	**2.0**	**1.4**	1.2	0.2	tr	-	tr	94.0	93.0	0.4	0.65	0.65	**0.65**
B	**3.5**			**2.5**	**2.8**	tr	tr	2.5		0.3	91.2			0.63	0.63	**0.63**
H																
M	**3.5**			**3.0**	**2.5**	2.0	0.3	0.1		0.1	91.0	91.0	tr			**0.62**
MEAN	**3.2**			**2.5**	**2.2**						92.1			0.64	0.64	**0.63**

COAL B - v7717 KEIRAVILLE KONSULTANTS - SUMMARY SHEET

OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	65.5	46.8	18.7	22.8	3.5	0.2	tr	1.4	1.9	tr	8.2	3.3	3.0	0.88	0.85	0.86
B	66.8	62.8	4.0	24.8	3.1	1.3	1.1	0.7			5.3	4.5	0.4	0.81	0.79	0.81
H																
M	68.1	46.0	22.1	22.0	1.3	0.3	0.3	0.3	0.2	0.2	8.6	6.2	2.4	0.87	0.85	0.86
MEAN	66.8			23.2	2.6						7.4			0.85	0.83	0.84

SHALE B - v7714

OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	5.3	0.6	4.7	1.5	1.5	1.5	tr	tr		tr	92.7	89.0	2.7	0.72	0.69	0.69
B	10.9	6.9	4.0	2.7	1.8	1.2	0.3		Tr alg	0.3	84.6	85.7	8.9	0.64	0.64	0.64
H																
M	6.4	0.6	5.8	1.5	1.5	0.5	0.9	tr	-	-	90.6	77.3	10.6			0.68
MEAN	7.5			1.9	1.6						89.3			0.68	0.67	0.67

COAL C - v7718 KEIRAVILLE KONSULTANTS - SUMMARY SHEET

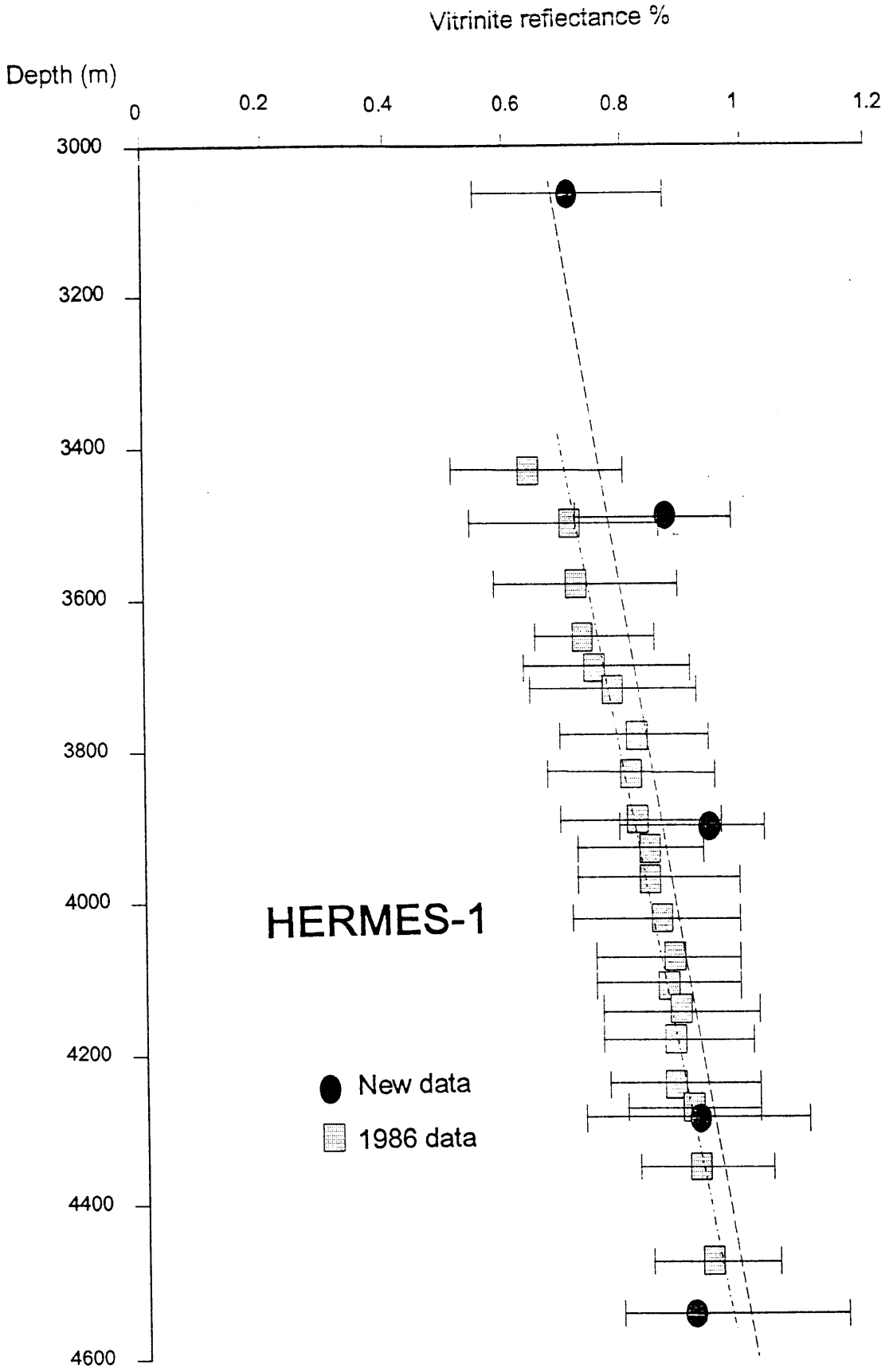
OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	**46.0**	23.1	22.8	**37.8**	**1.3**	0.5	0.8	tr	tr	tr	14.0	14.8	0.1	1.06	1.04	**1.05**
B																
H																
M	**45.5**	26.7	18.8	**42.0**	**1.2**	0.7	0.5	tr	-	-	11.3	10.9	0.2	1.02	1.00	**1.01**
MEAN	**46.0**			**40.0**	**1.3**						12.7			1.04	1.02	**1.03**

SHALE C - v7715 Note: some difficulties were encountered mounting this sample probably due to the presence of weathered pyrite. The polished blocks contained small amounts of material and maceral results are variable due to the use of small non-representative samples. This problem is not likely to have affected the reflectance data.

OPER-ATOR	VIT	TV	DV	I	L	Spor	Cut	Res	Suber	LD	Mins	Q+C	Pyr	R Tv	R Dv	R
A	**16**	5	10	**12**	**tr**	tr	-	-	-	-	72	62	10	0.95	0.91	**0.92**
B																
H	**7.0**	4.3	2.7	**2.2**	-	-	-	-	-	-	90.8	80.7	3.8	0.93	0.94	**0.93**
M	**4**			**5**	-	-	-	-	-	-	91	81	2.5			**0.92**
MEAN	**9.0**			**6.4**							84.6			0.94	0.93	**0.92**

ROCK-EVAL AND TOC DATA

SAMPLE	TOC	T max	S1	S2	S3	S1+S2	S3/S3	PI	PC	HI	PI
COAL A	59.5	432	9.10	116.73	4.55	125.83	26.65	0.07	10.44	196	8
SHALE A	4.35	431	0.64	10.57	0.47	11.21	22.49	0.06	0.93	243	11
COAL B	75.0	439	16.73	206.53	3.86	223.26	53.51	0.07	18.53	275	5
SHALE B	4.52	431	1.16	9.30	0.38	10.46	24.47	0.11	0.87	206	8
COAL C	71.1	455	18.46	145.28	3.75	163.74	38.74	0.11	13.59	204	5
SHALE C	6.79	443	1.27	2.91	0.54	4.18	5.39	0.30	0.35	43	8


Vitrinite reflectance %
Depth (m)
0
0.2
0.4
0.6
0.8
1
1.2
3000
3200
3400
3600
3800
4000
4200
4400
4600
HERMES-1
New data
1986 data

Sample No(s)	Depth(m) Sample type	$\bar{R}_v$ max (%)	Range (%)	N	Description Including Liptinite Fluorescence Characteristics
v9426	3065-3070 Ctgs	0.71	0.55-0.87	29	Common cutinite, yellow to dull orange, sparse resinite and liptodetrinite, yellow to orange, rare lamalginite, yellow to orange, rare suberinite brown to non-fluorescence. (Claystone> siltstone>coal>sandstone>shaly coal>carbonate. Coal major, vitrite>clarite>duroclarite. Mineral-free maceral group composition of the coal: vitrinite - 97.4%, inertinite - 0.9%, liptinite - 1.7%. Shaly coal abundant, vitrite=clarite. Mineral-free maceral group composition of the shaly coal: vitrinite - 95.5%, inertinite - 1.0%, liptinite - 3.5%. Dom abundant, V>>L>I. Vitrinite abundant, liptinite common, inertinite sparse. Oil drops rare, greenish yellow. Mineral fluorescence pervasive, yellow to dull orange. Cavings present with reflectance < 0.4%. Iron oxides sparse. Pyrite abundant.)
v9427	3490-3495 Ctgs	0.87	0.72-0.98	27	Common cutinite, yellow to dull orange, sparse sporinite, resinite and liptodetrinite, yellow to dull orange, rare suberinite, brown to non-fluorescing. (Claystone=coal> sandstone>siltstone>shaly coal>carbonate. Coal major, vitrite>clarite>>inertite. Mineral-free maceral group composition of the coal: vitrinite - 99.1%, inertinite - 0.2%, liptinite - 0.7%. Shaly coal abundant, vitrite>clarite>duroclarite. Mineral-free maceral group composition of the shaly coal: vitrinite - 95.3%, inertinite - 0.7%, liptinite - 4.0%. Dom abundant, V>>L>I. Vitrinite abundant, liptinite and inertinite sparse. Exsudatinite rare, orange. Oil drops rare, bright yellow. Mineral fluorescence pervasive, yellow to dull orange. Cavings present with reflectance < 0.4%. Iron oxides sparse. Pyrite common.)
v9428	3900-3905 Ctgs	0.94	0.79-1.03	29	Sparse cutinite and resinite, orange to brown rare liptodetrinite and sporinite, orange to brown. (Claystone>sandstone siltstone=coal>shaly coal>carbonate. Coal major, vitrite>>clarite>duroclarite. Mineral-free maceral group composition of the coal: vitrinite - 98.6%, inertinite - 0.6%, liptinite - 0.8%. Shaly coal abundant, vitrite>clarite> duroclarite. Mineral-free maceral group composition of the shaly coal: vitrinite - 98.5%, inertinite - 0.5%, liptinite - 1.0%. Dom abundant, V>>I>L. Vitrinite abundant, inertinite and liptinite rare. Mineral fluorescence pervasive, yellow to dull orange. Iron oxides common. Pyrite abundant.)
v9429	4285-4290 Ctgs	0.92	0.73-1.10	26	Rare cutinite, sporinite and liptodetrinite, dull orange. (Siltstone>claystone>shaly coal>sandstone>coal. Coal major, vitrite. Mineral-free maceral group composition of the coal: vitrinite - 100%, inertinite - <0.1%, liptinite - <0.1%. Shaly coal major, vitrite. Mineral-free maceral group composition of the shaly coal: vitrinite - 100%, inertinite - <0.1%, liptinite - <0.1%. Dom common, V>>I>L. Vitrinite common, inertinite and liptinite rare. Mineral fluorescence patchy, dull orange. Iron oxides rare. Pyrite common.)

HERMES-1

Sample No(s)	Depth(m) Sample type	$\bar{R}_v$ max (%)	Range (%)	N	Description Including Liptinite Fluorescence Characteristics
v9430	4540-4545 Ctgs	0.91	0.79-1.16	12	Rare cutinite, yellow to orange, rare liptodetrinite, yellow to orange. Most of liptinite probably cavings. (Siltstone>sandstone>claystone. Dom sparse, V>I>L. All three maceral groups rare. Mineral fluorescing pervasive, faint green. Cavings common, Rv = 0.47-0.70%. Iron oxides sparse. Pyrite abundant.)

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9426	ESSO, HERMES-1		3065-3070m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	24	97.4	0.9	1.7	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>CLARITE>DUROCLARITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	4	95.5	1.0	3.5	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: VITRITE=CLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	10	10	2	2	2	2	14	14
>2% (ABUNDANT)	12	22	0	2	12	14	20	34
>0.5% (COMMON)	12	34	6	8	12	26	12	46
>0.1% (SPARSE)	6	40	20	28	0	26	10	56
APPROX. ABUNDANCE	2.39		0.44		1.17		4.00	
APPROX. % OF DOM	59.7		10.9		29.3		ABUNDANT	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	14	26	30	4	24	2	

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9427	ESSO, HERMES-1		3490-3495m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	32	99.1	0.2	0.7	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>CLARITE>DUROCLARITE>INERTITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	6	95.3	0.7	4.0	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: VITRITE>CLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	8	8	0	0	0	0	8	8
>2% (ABUNDANT)	14	22	0	0	2	2	14	22
>0.5% (COMMON)	4	26	8	8	8	10	16	38
>0.1% (SPARSE)	7	33	8	16	16	26	4	42
APPROX. ABUNDANCE	2.11		0.12		0.27		2.50	
APPROX. % OF DOM	84.3		5.0		10.7		ABUNDANT	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	18	8	32	6	32	4	

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9428	ESSO, HERMES-1		3900-3905m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	20	98.6	0.6	0.8	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>>CLARITE>DUROCLARITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	4	98.5	0.5	1.0	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: VITRITE>CLARITE>DUROCLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	16	16	0	0	0	0	16	16
>2% (ABUNDANT)	24	40	0	0	0	0	24	40
>0.5% (COMMON)	4	44	2	2	0	0	4	44
>0.1% (SPARSE)	2	46	8	10	10	10	4	48
APPROX. ABUNDANCE	3.90		0.05		0.03		3.98	
APPROX. % OF DOM	98.0		1.2		0.8		ABUNDANT	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	26	20	28	4	20	2	

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9429	ESSO, HERMES-1		4285-4290m	Ctgs

COAL

PERCENTAGE IN COAL*

*CALCULATED ON A MINERAL MATTER FREE BASIS

		V	I	L	TOTAL
TOTAL COAL %	16	100.0	tr.	tr.	100.0

MICROLITHOTYPES: VITRITE

SHALY COAL

PERCENTAGE IN SHALY COAL*

*CALCULATED ON A MINERAL MATTER FREE BASIS

		V	I	L	TOTAL
TOTAL SHALY COAL %	18	99.9	0.1	tr.	100.0

RELATED MICROLITHOTYPES: VITRITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	0	0	0	0	0	0	0	0
>2% (ABUNDANT)	8	8	0	0	0	0	8	8
>0.5% (COMMON)	6	14	0	0	0	0	6	14
>0.1% (SPARSE)	6	20	4	4	4	4	6	20
APPROX. ABUNDANCE	0.57		0.01		0.01		0.60	
APPROX. % OF DOM	96.0		2.0		2.0		COMMON	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	18	30	28	18	16	TR.	

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9430	ESSO, HERMES-1		4540-4545m	Ctgs

COAL

PERCENTAGE IN COAL*

V	I	L	TOTAL

*CALCULATED ON A MINERAL MATTER FREE BASIS

TOTAL COAL %

MICROLITHOTYPES:

SHALY COAL

PERCENTAGE IN SHALY COAL*

V	I	L	TOTAL

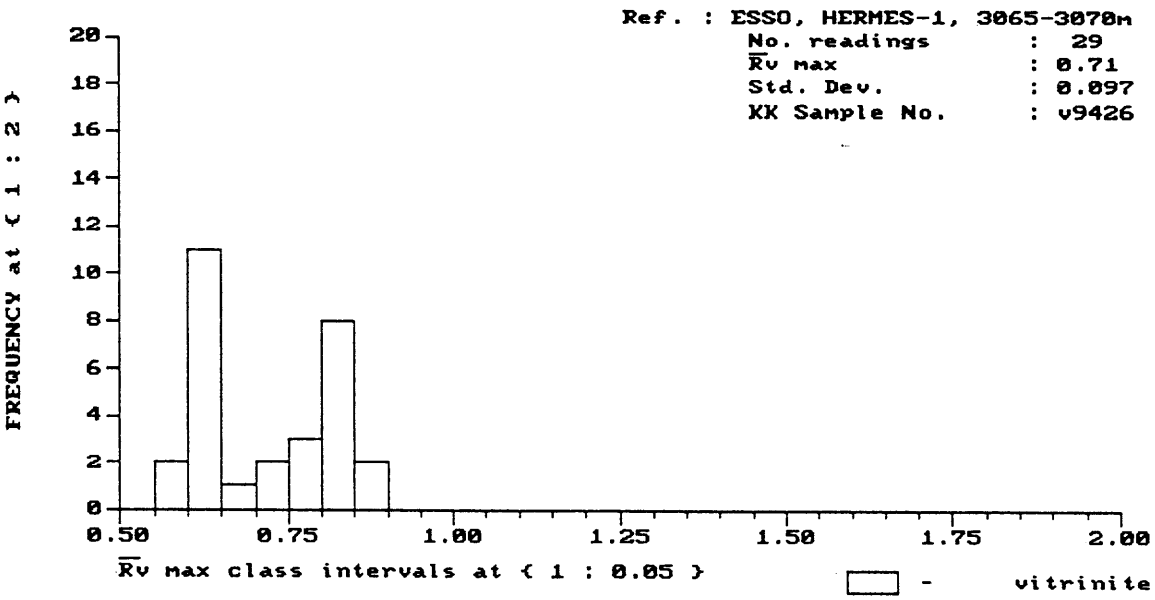
*CALCULATED ON A MINERAL MATTER FREE BASIS

TOTAL SHALY COAL %

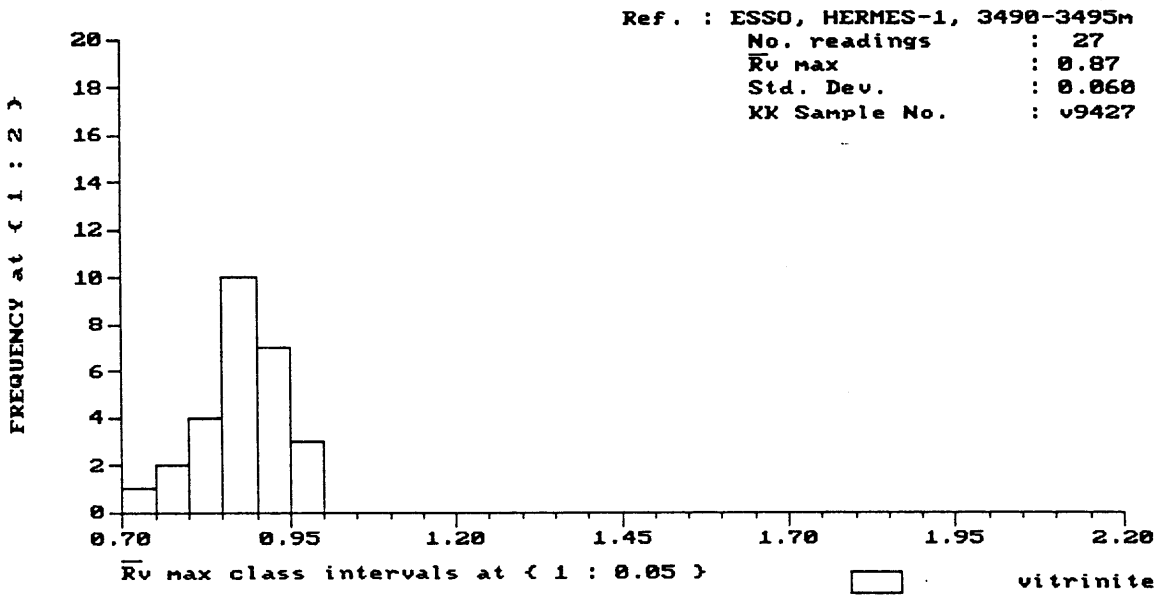
RELATED MICROLITHOTYPES:

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	0	0	0	0	0	0	0	0
>2% (ABUNDANT)	0	0	0	0	0	0	0	0
>0.5% (COMMON)	4	4	0	0	0	0	8	8
>0.1% (SPARSE)	14	18	22	22	2	2	26	34
APPROX. ABUNDANCE	0.09		0.07		0.01		0.17	
APPROX. % OF DOM	54.1		38.8		7.1		SPARSE	

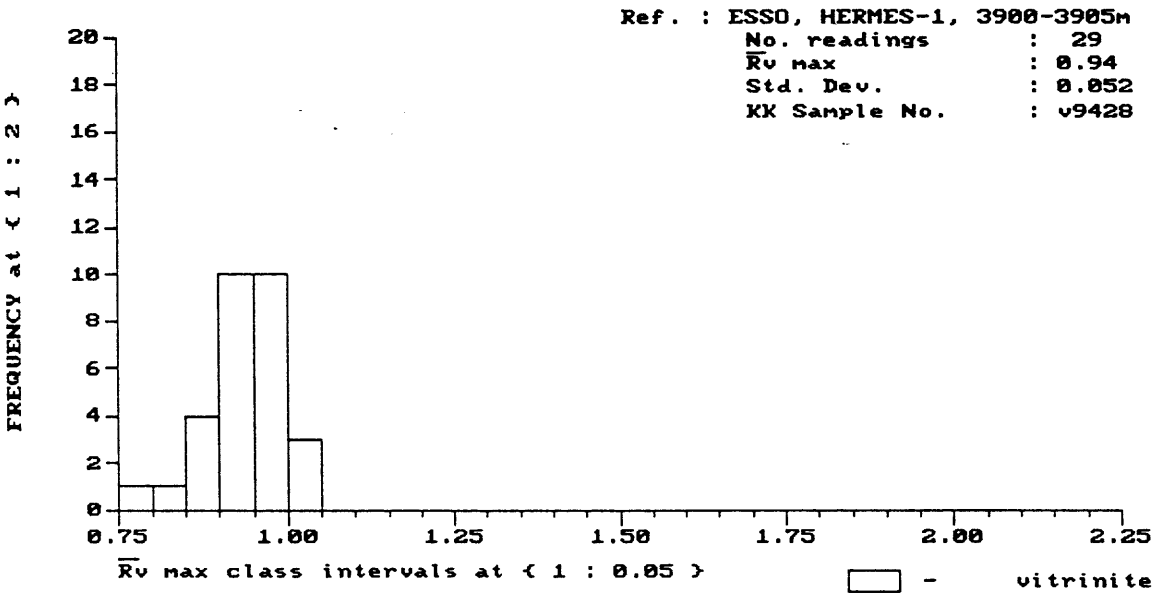
ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	46	50	4				



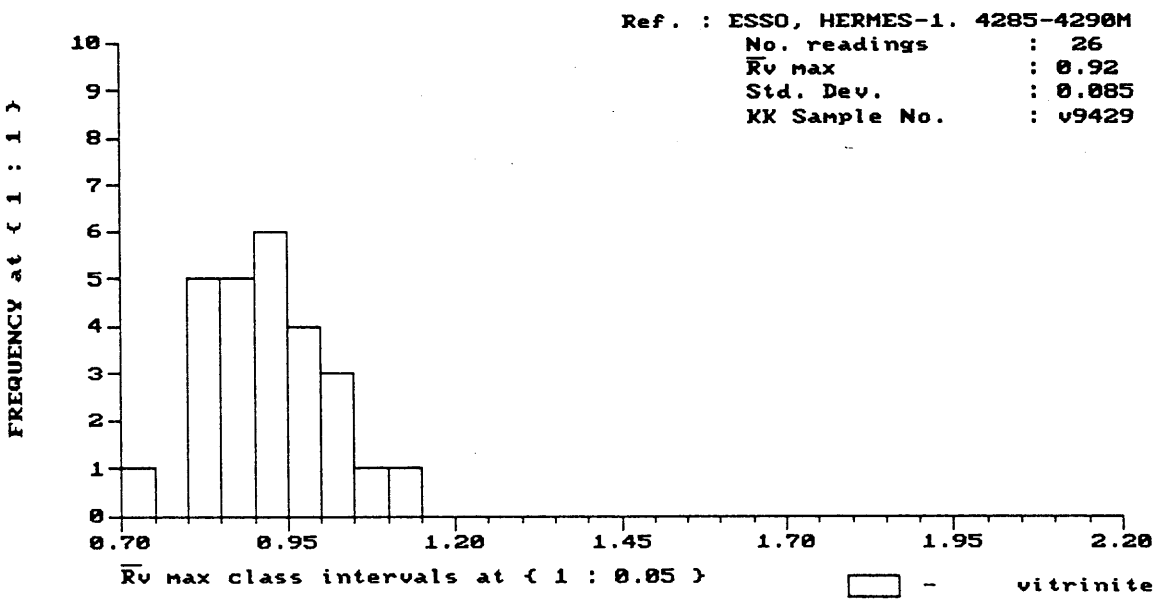
Keiraville Konsultants Pty. Ltd.



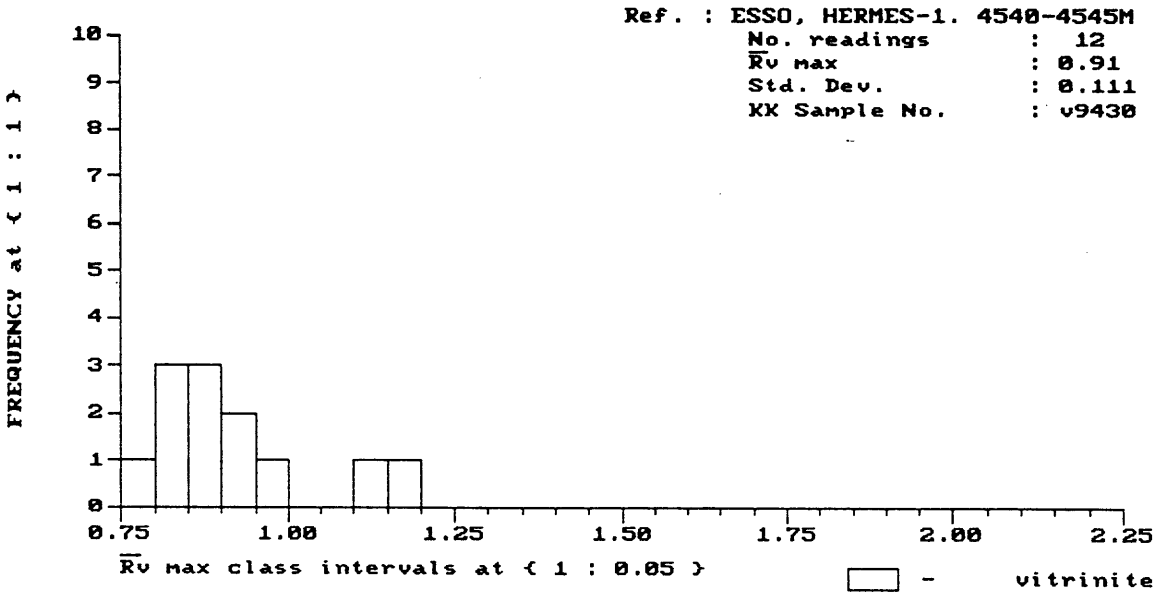
Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70	1		1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02			1.32			1.62			1.92		
0.13			0.43			0.73	1		1.03			1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75	2		1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47			0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78	1		1.08			1.38			1.68			1.98		
0.19			0.49			0.79		FGV	1.09			1.39			1.69			1.99		
0.20			0.50			0.80	4		1.10			1.40			1.70			2.00		
0.21			0.51			0.81			1.11			1.41			1.71			2.01		
0.22			0.52			0.82	2		1.12			1.42			1.72			2.02		
0.23			0.53			0.83	1		1.13			1.43			1.73			2.03		
0.24			0.54			0.84	1		1.14			1.44			1.74			2.04		
0.25			0.55	1		0.85	1		1.15			1.45			1.75			2.05		
0.26			0.56			0.86			1.16			1.46			1.76			2.06		
0.27			0.57			0.87	1		1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59	1		0.89			1.19			1.49			1.79			2.09		
0.30			0.60	3		0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62	3		0.92			1.22			1.52			1.82			2.12		
0.33			0.63	2	FGV	0.93			1.23			1.53			1.83			2.13		
0.34			0.64	3		0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39			0.69	1		0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
25 %	0.5 %	1.3 %	<0.1	

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								0.1	0.8	<0.1	0.2	0.2				

Sample Number V9426 Well Name Esso; Hermes-1 Depth 3065 - 3070m Sample type dtp

Date 18/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72	1		1.02			1.32			1.62			1.92		
0.13			0.43			0.73			1.03			1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47			0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78	1		1.08			1.38			1.68			1.98		
0.19			0.49			0.79	1		1.09			1.39			1.69			1.99		
0.20			0.50			0.80	2		1.10			1.40			1.70			2.00		
0.21			0.51			0.81			1.11			1.41			1.71			2.01		
0.22			0.52			0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83	1		1.13			1.43			1.73			2.03		
0.24			0.54			0.84	1		1.14			1.44			1.74			2.04		
0.25			0.55			0.85	1		1.15			1.45			1.75			2.05		
0.26			0.56			0.86	3		1.16			1.46			1.76			2.06		
0.27			0.57			0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88	3	FGV	1.18			1.48			1.78			2.08		
0.29			0.59			0.89	3		1.19			1.49			1.79			2.09		
0.30			0.60			0.90	3		1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92	1		1.22			1.52			1.82			2.12		
0.33			0.63			0.93	3		1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95	1		1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98	2		1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
38%	0.3%	2.4	<0.1	

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut Exsudatinite
								0.4	2.5	0.1	0.2	0.2				<0.1

Sample Number V9427 Well Name Esso ; Hermes-1 Depth 3490-3495m Sample type Cgs

Date 18/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02	2		1.32			1.62			1.92		
0.13			0.43			0.73	1		1.03	1		1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05	1		1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47			0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78			1.08			1.38			1.68			1.98		
0.19			0.49			0.79			1.09			1.39			1.69			1.99		
0.20			0.50			0.80			1.10	1		1.40			1.70			2.00		
0.21			0.51			0.81	1		1.11			1.41			1.71			2.01		
0.22			0.52			0.82	1		1.12			1.42			1.72			2.02		
0.23			0.53			0.83	1		1.13			1.43			1.73			2.03		
0.24			0.54			0.84	2		1.14			1.44			1.74			2.04		
0.25			0.55			0.85	1		1.15			1.45			1.75			2.05		
0.26			0.56			0.86	2		1.16			1.46			1.76			2.06		
0.27			0.57			0.87	1	FGV	1.17			1.47			1.77			2.07		
0.28			0.58			0.88	1		1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90	1		1.20			1.50			1.80			2.10		
0.31			0.61			0.91	2		1.21			1.51			1.81			2.11		
0.32			0.62			0.92	2		1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94	1		1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97	2		1.27			1.57			1.87			2.17		
0.38			0.68			0.98	2		1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
27 %	<0.1 %	<0.1 %		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								<0.1%	<0.1%			<0.1%				

Sample Number V. 9429. Well Name Esso, Hermes-1 Depth 4285-4290m Sample type cuttings.

Date 18/5/1994. Op. HM FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00	1	1	1.30			1.60			1.90		
0.11			0.41			0.71			1.01	1		1.31			1.61			1.91		
0.12			0.42			0.72			1.02		FGV	1.32			1.62			1.92		
0.13			0.43			0.73			1.03	1	↓	1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47			0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78			1.08			1.38			1.68			1.98		
0.19			0.49			0.79	1	↑	1.09			1.39			1.69			1.99		
0.20			0.50			0.80			1.10			1.40			1.70			2.00		
0.21			0.51			0.81			1.11			1.41			1.71			2.01		
0.22			0.52			0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83	1		1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55			0.85			1.15			1.45			1.75			2.05		
0.26			0.56			0.86			1.16			1.46			1.76			2.06		
0.27			0.57			0.87	1		1.17			1.47			1.77			2.07		
0.28			0.58			0.88	1		1.18			1.48			1.78			2.08		
0.29			0.59			0.89	2		1.19			1.49			1.79			2.09		
0.30			0.60			0.90	2		1.20			1.50			1.80			2.10		
0.31			0.61			0.91	1		1.21			1.51			1.81			2.11		
0.32			0.62			0.92	1	FGV	1.22			1.52			1.82			2.12		
0.33			0.63			0.93	3		1.23			1.53			1.83			2.13		
0.34			0.64			0.94	3		1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96	5		1.26			1.56			1.86			2.16		
0.37			0.67			0.97	2		1.27			1.57			1.87			2.17		
0.38			0.68			0.98	1		1.28			1.58			1.88			2.18		
0.39			0.69			0.99	2		1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
23 %	0.2%	0.2%		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								<0.1	0.1		0.1	<0.1				

Sample Number V9428 Well Name ESSO; Hermes -1 Depth 3400 - 3405m Sample type Cttgs.

Date 18/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70	1	↓	1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02			1.32			1.62			1.92		
0.13			0.43			0.73			1.03			1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05			1.35			1.65			1.95		
0.16			0.46	1	↑	0.76			1.06			1.36			1.66			1.96		
0.17			0.47	2		0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78			1.08			1.38			1.68			1.98		
0.19			0.49			0.79	1	↑	1.09			1.39			1.69			1.99		
0.20			0.50	1		0.80	1		1.10	1	↓	1.40			1.70			2.00		
0.21			0.51	1		0.81			1.11			1.41			1.71			2.01		
0.22			0.52	1		0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83	2		1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55			0.85			1.15			1.45			1.75			2.05		
0.26			0.56	1		0.86	1		1.16	1	↓	1.46			1.76			2.06		
0.27			0.57			0.87			1.17			1.47			1.77			2.07		
0.28			0.58		CAV	0.88	2		1.18			1.48			1.78			2.08		
0.29			0.59	1		0.89			1.19			1.49			1.79			2.09		
0.30			0.60	1		0.90	1	FGV	1.20			1.50			1.80			2.10		
0.31			0.61	1		0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63	1		0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94	1		1.24			1.54			1.84			2.14		
0.35			0.65	1		0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97	1		1.27			1.57			1.87			2.17		
0.38			0.68	1		0.98			1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
<0.1%	<0.1%	<0.1%		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
									<0.1%			<0.1%				

Sample Number V. 9430 Well Name Esso, Hermes-1 Depth 4540 - 4545m Sample type Cttg

Date 18/5/1994 Op. HR FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings.

DA - Drilling Mud Additives

ANEMONE-1/1A

Sample No(s)	Depth(m) Sample type	$\bar{R}_v$ max (%)	Range (%)	N	Description Including Liptinite Fluorescence Characteristics
v9431	3070-3075 Ctgs	0.51	0.44-0.63	27	Common cutinite, yellow to orange, sparse sporinite, greenish yellow to orange, sparse liptodetrinite, yellow to orange, rare resinite, greenish yellow, rare suberinite, weak brown. (Claystone>shaly coal>sandstone>siltstone=coal. Coal major, vitrite>>clarite. Mineral-free maceral group composition of the coal: vitrinite - 98.2%, inertinite - <0.1%, liptinite - 1.8%. Shaly coal major, clarite>vitrite. Mineral-free maceral group composition of the shaly coal: vitrinite - 83%, inertinite - <0.1%, liptinite - 17%. Shaly coal major, clarite>vitrite. Mineral-free maceral group composition of the shaly coal: vitrinite - 93.4%, inertinite - 0.6%, liptinite - 6.0%. Dom common, V>L>I. Vitrinite and liptinite common, inertinite rare. Mineral fluorescence patchy, dull orange. Possible rootlet beds present. Iron oxides sparse. Pyrite abundant.)
v9432	3330-3335 Ctgs	0.52	0.44-0.62	26	Common cutinite and sporinite, greenish yellow, sparse liptodetrinite, yellow to orange. (Sandstone>coal>siltstone> shaly coal>claystone. Coal major, vitrite>clarite. Mineral-free maceral group composition of the coal: vitrinite - 98.7%, inertinite - 0.2%, liptinite - 1.2%. Shaly coal major, clarite>vitrite. Mineral-free maceral group composition of the shaly coal: vitrinite - 90.5%, inertinite - 1.0%, liptinite - 8.5%. Dom abundant, V>L>I. Vitrinite common, liptinite common, inertinite sparse. Mineral fluorescence patchy, orange to dull orange. Possible rootlet beds present. Iron oxides sparse. Pyrite abundant.)
v9433	3355-3360 Ctgs	0.39	0.41-0.57	29	Common cutinite, yellow to orange, sparse sporinite and resinite yellow to orange, rare liptodetrinite, Botryococcus-related telalginite, yellow. (Coal>sandstone>carbonate>siltstone> claystone. Coal major, vitrite>clarite>duroclarite. Mineral-free maceral group composition of the coal: vitrinite - 93.1%, inertinite - 4.6%, liptinite - 2.3%. Dom common, V>I>L. Vitrinite common, inertinite and liptinite sparse. Exsudatinite rare, orange. Mineral fluorescence pervasive, moderate green to moderate orange. Iron oxides sparse. Pyrite abundant.)

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9431	ESSO, ANEMONE-1/1A		3070-3075m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	18	98.2	0.0	1.8	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>>CLARITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	22	93.4	0.6	6.0	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: CLARITE>VITRITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	0	0	0	0	0	0		0
>2% (ABUNDANT)	10	10	0	0	8	8		0
>0.5% (COMMON)	6	16	0	0	6	14		0
>0.1% (SPARSE)	2	18	12	12	4	18		0
APPROX. ABUNDANCE	0.68		0.04		0.56		1.28	
APPROX. % OF DOM	53.2		2.8		44.0		COMMON	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	18	14	28	22	18		

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9432	ESSO, ANEMONE-1/1A		3330-3335m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	26	98.7	0.2	1.2	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>CLARITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	16	90.5	1.0	8.5	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: CLARITE>VITRINITE>DUROCLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	4	4	0	0	2	2		0
>2% (ABUNDANT)	8	12	0	0	4	6		0
>0.5% (COMMON)	14	26	6	6	4	10		0
>0.1% (SPARSE)	4	30	10	16	12	22		0
APPROX. ABUNDANCE	1.27		0.11		0.62		2.00	
APPROX. % OF DOM	63.5		5.3		31.2		ABUNDANT	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	28	20	10	16	26		

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9433	ESSO, HERMES-1		3355-3360m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	30	93.1	4.6	2.3	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>CLARITE>DUROCLARITE

SHALY COAL

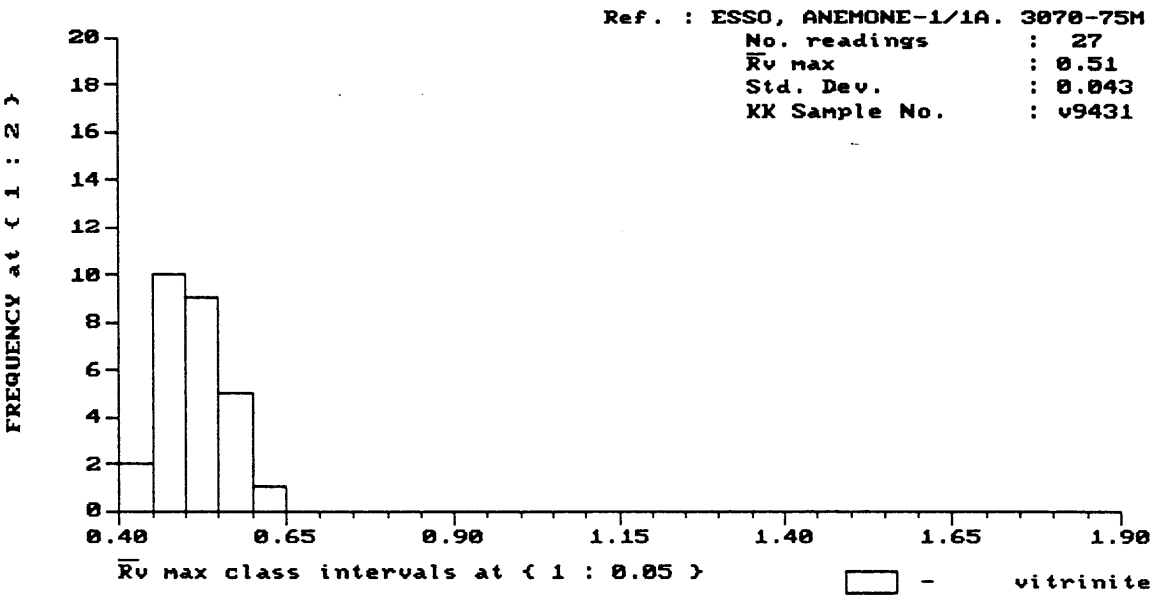
	PERCENTAGE IN SHALY COAL*			
	V	I	L	TOTAL
TOTAL SHALY COAL %				

*CALCULATED ON A MINERAL MATTER FREE BASIS

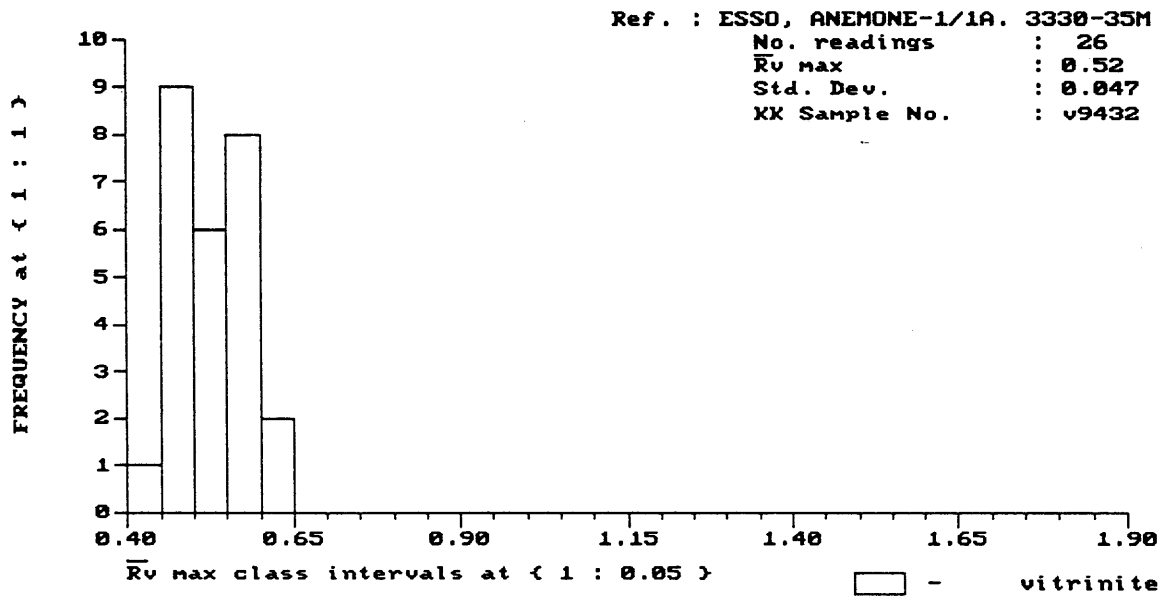
RELATED MICROLITHOTYPES:

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	2	2	2	2	0	0	4	4
>2% (ABUNDANT)	8	10	0	2	0	0	10	14
>0.5% (COMMON)	6	16	6	8	10	10	4	18
>0.1% (SPARSE)	0	16	12	20	6	16	4	22
APPROX. ABUNDANCE	0.86		0.41		0.14		1.41	
APPROX. % OF DOM	60.7		29.2		10.1		COMMON	

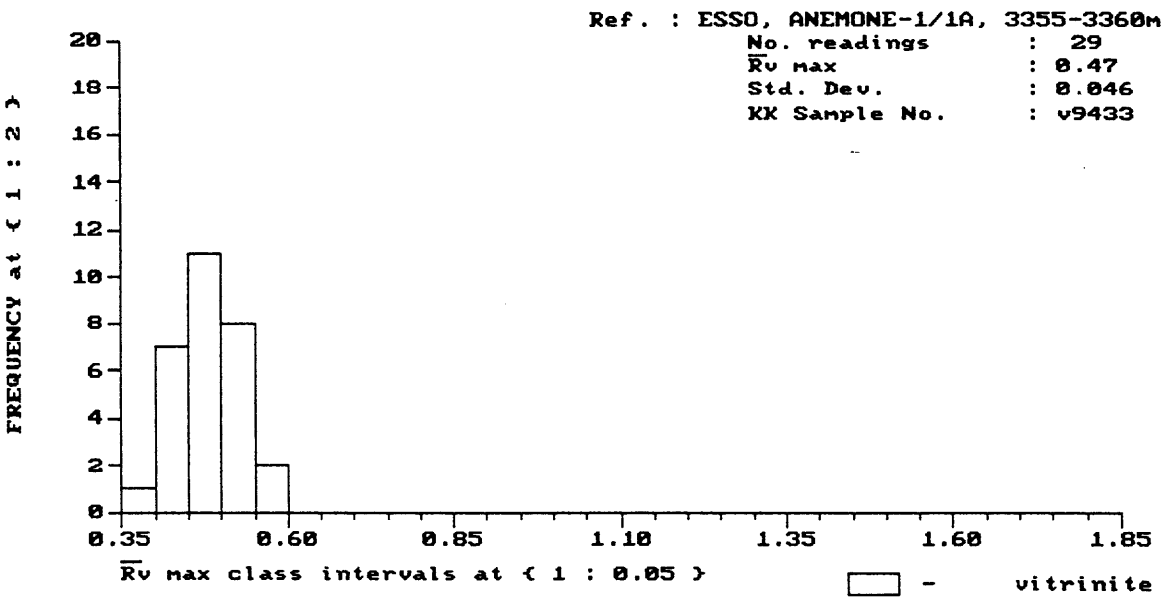
ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	26	14	6		30	24	



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02			1.32			1.62			1.92		
0.13			0.43			0.73			1.03			1.33			1.63			1.93		
0.14			0.44	2	↑	0.74			1.04			1.34			1.64			1.94		
0.15			0.45	1		0.75			1.05			1.35			1.65			1.95		
0.16			0.46	1		0.76			1.06			1.36			1.66			1.96		
0.17			0.47	3		0.77			1.07			1.37			1.67			1.97		
0.18			0.48	2		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	3		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	3		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	1		0.81			1.11			1.41			1.71			2.01		
0.22			0.52	3		0.82			1.12			1.42			1.72			2.02		
0.23			0.53	2	FGV	0.83			1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55	3		0.85			1.15			1.45			1.75			2.05		
0.26			0.56	1		0.86			1.16			1.46			1.76			2.06		
0.27			0.57	1		0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63	1	↓	0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
30.0 %	< 0.1 %	0.8 %		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								0.2%	0.5%		< 0.1%	0.1%				

Sample Number V-9431 Well Name Esso, Anemone-1/1A Depth 3070-3075m Sample type cgs

Date 18/5/1994 Op. HR FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02			1.32			1.62			1.92		
0.13			0.43			0.73			1.03			1.33			1.63			1.93		
0.14			0.44	1		0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05			1.35			1.65			1.95		
0.16			0.46	2		0.76			1.06			1.36			1.66			1.96		
0.17			0.47	1		0.77			1.07			1.37			1.67			1.97		
0.18			0.48	3		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	3		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	1		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	1		0.81			1.11			1.41			1.71			2.01		
0.22			0.52	1		0.82			1.12			1.42			1.72			2.02		
0.23			0.53	1		0.83			1.13			1.43			1.73			2.03		
0.24			0.54	2	FGV	0.84			1.14			1.44			1.74			2.04		
0.25			0.55	1		0.85			1.15			1.45			1.75			2.05		
0.26			0.56	2		0.86			1.16			1.46			1.76			2.06		
0.27			0.57	4		0.87			1.17			1.47			1.77			2.07		
0.28			0.58	1		0.88			1.18			1.48			1.78			2.08		
0.29			0.59	—		0.89			1.19			1.49			1.79			2.09		
0.30			0.60	1		0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62	1		0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE		INERTINITE						LIPTINITE								OIL DROPS	BITUMEN
34%		0.2%						1.6									
TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut	
								0.5%	1.0%			0.1%					

Sample Number V. 9432 Well Name Esso, Anemone-1/11A Depth 3330 – 3335 m Sample type Cgs

Date 8/5/1994 Op. HR FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41	2		0.71			1.01			1.31			1.61			1.91		
0.12			0.42	1		0.72			1.02			1.32			1.62			1.92		
0.13			0.43	2		0.73			1.03			1.33			1.63			1.93		
0.14			0.44	2		0.74			1.04			1.34			1.64			1.94		
0.15			0.45	3		0.75			1.05			1.35			1.65			1.95		
0.16			0.46	4		0.76			1.06			1.36			1.66			1.96		
0.17			0.47	3		0.77			1.07			1.37			1.67			1.97		
0.18			0.48			0.78			1.08			1.38			1.68			1.98		
0.19			0.49	1		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	3		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	1	FGV	0.81			1.11			1.41			1.71			2.01		
0.22			0.52	1		0.82			1.12			1.42			1.72			2.02		
0.23			0.53	3		0.83			1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55			0.85			1.15			1.45			1.75			2.05		
0.26			0.56			0.86			1.16			1.46			1.76			2.06		
0.27			0.57	2		0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39	1	↑	0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
28%	1.5%	0.8%		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut / Exsudatinite
								0.2	0.5		0.1	<0.1			<0.1	<0.1

Sample Number V9433 Well Name Esso; Anemone-1/1A Depth 3355-3360m Sample type cdgs

Date 19/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

ANGLER-1

Sample No(s)	Depth(m) Sample type	$\bar{R}_v$ max (%)	Range (%)	N	Description Including Liptinite Fluorescence Characteristics
v9434	3025-3030 Ctgs	0.55	0.41-0.73	30	Rare cutinite, sporinite, resinite and liptodetrinite, yellow orange, rare suberinite, brown to non-fluorescing. (Sandstone >siltstone>coal. Coal abundant, vitrite>vitrinertite>inertite> clarite. Mineral-free maceral group composition of the coal: vitrinite - 90%, inertinite - 8%, liptinite - 2%. Dom sparse, V>L>I. Vitrinite sparse, inertinite and liptinite rare. Mineral fluorescence pervasive, faint green to orange. Iron oxides rare. Glauconite sparse. Pyrite abundant.)
v9435	3085-3090 Ctgs	0.53	0.47-0.73	27	Common suberinite, brown to non-fluorescing, common sporinite, yellow to orange, sparse resinite, cutinite liptodetrinite, yellow to orange, sparse suberinite, dull orange to brown. (Sandstone>coal>siltstone. Coal major, duroclarite>vitrite=vitrinertite. Mineral-free maceral group composition of the coal: vitrinite - 85%, inertinite - 10%, liptinite - 5%. Dom common, V>L>I. Vitrinite and liptinite sparse, inertinite rare. Mineral fluorescence pervasive, faint green to weak orange. Iron oxides sparse. Glauconite sparse. Pyrite abundant.)
v9436	3205-3210 Ctgs	0.45	0.39-0.68	27	Sparse cutinite, sporinite, resinite and liptodetrinite, yellow to orange, rare suberinite brown to non-fluorescing. (Siltstone>sandstone>coal>shaly coal. Coal abundant, vitrite> duroclarite>clarite. Mineral-free maceral group composition of the coal: vitrinite - 90%, inertinite - 7%, liptinite - 3%. Shaly coal abundant, vitrite>clarite=duroclarite. Mineral-free maceral group composition of the shaly coal: vitrinite - 93%, inertinite - 4%, liptinite - 3%. Dom common, V>I>L. Vitrinite common, inertinite and liptinite sparse. Mineral fluorescence pervasive, moderate green to weak dull orange. Iron oxides common. Glauconite common. Pyrite abundant.)
v9437	3275-3280 Ctgs	0.45	0.37-0.51	26	Sparse cutinite, sporinite, resinite and liptodetrinite, yellow to orange. (Sandstone>claystone>coal>shaly coal carbonate. Coal abundant, vitrite>clarite>duroclarite. Mineral-free maceral group composition of the coal: vitrinite - 95%, inertinite - 2%, liptinite - 3%. Shaly coal rare, V>>L>I, vitrite>clarite. Dom abundant, V>>L>I. Vitrinite common, liptinite and inertinite sparse. Mineral fluorescence pervasive, faint green to weak orange. Textural evidence suggests the presence of cavings with reflectance = 0.4% but texturally mature vitrinite of the same reflectance is also present.Iron oxides common. Pyrite abundant.)

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9434	ESSO, ANGLER-1		3025-3030m	Ctgs

COAL

PERCENTAGE IN COAL*

*CALCULATED ON A MINERAL MATTER FREE BASIS

		V	I	L	TOTAL
TOTAL COAL %	2	90.0	8.0	2.0	100.0

MICROLITHOTYPES: VITRINERTITE=VITRITE>INERTITE>CLARITE

SHALY COAL

PERCENTAGE IN SHALY COAL*

*CALCULATED ON A MINERAL MATTER FREE BASIS

	V	I	L	TOTAL
TOTAL SHALY COAL %				

RELATED MICROLITHOTYPES:

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	0	0	0	0	0	0	0	0
>2% (ABUNDANT)	6	6	0	0	0	0	6	6
>0.5% (COMMON)	4	10	0	0	2	2	4	10
>0.1% (SPARSE)	4	14	8	8	4	6	4	14
APPROX. ABUNDANCE	0.42		0.02		0.04		0.48	
APPROX. % OF DOM	87.4		5.0		7.7		COMMON	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	88	10			2		

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9435	ESSO, ANGLER-1,		3085-3090m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	40	73.7	21.0	5.4	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: DUROCLARITE>VITRITE>VITRINERTITE

SHALY COAL

	PERCENTAGE IN SHALY COAL*			
	V	I	L	TOTAL
TOTAL SHALY COAL %				

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES:

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	4	4	0	0	0	0	2	2
>2% (ABUNDANT)	0	4	0	0	2	2	0	2
>0.5% (COMMON)	4	8	2	2	4	6	12	14
>0.1% (SPARSE)	10	18	10	12	10	16	8	22
APPROX. ABUNDANCE	0.68		0.06		0.20		0.94	
APPROX. % OF DOM	72.7		5.9		21.4		COMMON	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	46	14			40		

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9436	ESSO, ANGLER-1		3205-3210m	Ctgs

COAL

		PERCENTAGE IN COAL*			
		V	I	L	TOTAL
TOTAL COAL %	4	90.0	7.0	3.0	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

MICROLITHOTYPES: VITRITE>DUROCLARITE>CLARITE

SHALY COAL

		PERCENTAGE IN SHALY COAL*			
		V	I	L	TOTAL
TOTAL SHALY COAL %	2	93.0	4.0	3.0	100.0

*CALCULATED ON A MINERAL MATTER FREE BASIS

RELATED MICROLITHOTYPES: VITRITE>CLARITE=DUROCLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	2	2	0	0	0	0	2	2
>2% (ABUNDANT)	6	8	2	2	2	2	10	12
>0.5% (COMMON)	12	20	14	16	10	12	16	28
>0.1% (SPARSE)	18	38	24	40	24	36	26	54
APPROX. ABUNDANCE	0.86		0.37		0.32		1.55	
APPROX. % OF DOM	55.8		23.7		20.5		COMMON	

ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	40	54		2	4		

ABUNDANCE FACTORS

TOTAL COUNT N = 50

KK NO.	PROJECT	FORMATION	DEPTH	TYPE
v9437	ESSO, ANGLER-1		3275-3280m	Ctgs

COAL

PERCENTAGE IN COAL*

*CALCULATED ON A MINERAL MATTER FREE BASIS

		V	I	L	TOTAL
TOTAL COAL %	2	95.0	2.0	3.0	100.0

MICROLITHOTYPES: VITRITE>CLARITE>DUROCLARITE

SHALY COAL

PERCENTAGE IN SHALY COAL*

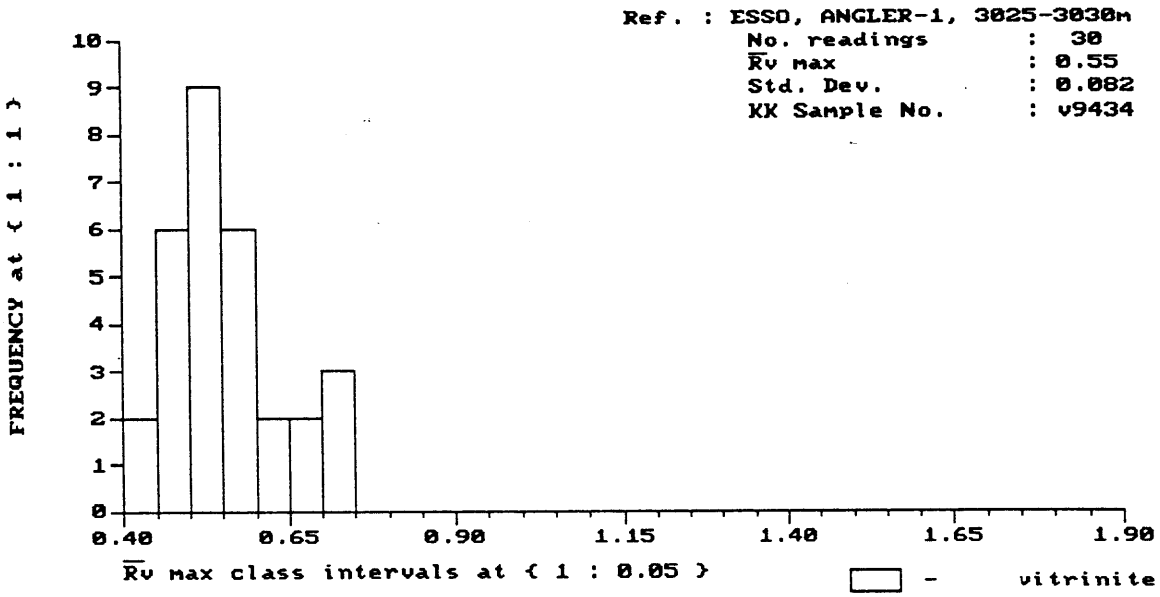
*CALCULATED ON A MINERAL MATTER FREE BASIS

		V	I	L	TOTAL
TOTAL SHALY COAL %	TRACES	94.0	2.0	4.0	100.0

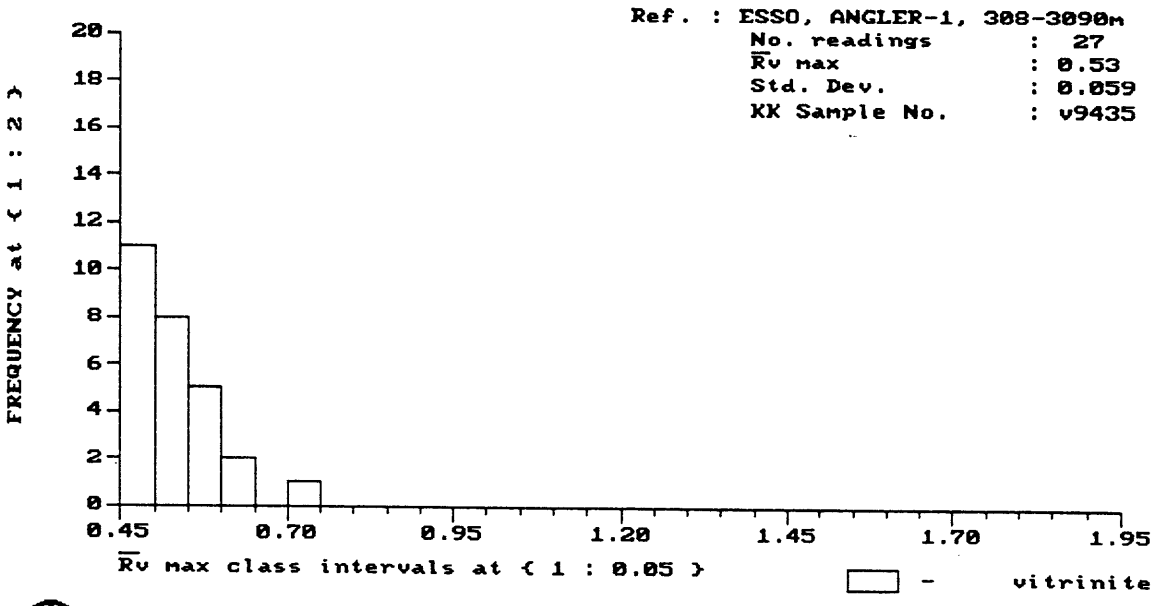
RELATED MICROLITHOTYPES: VITRITE>CLARITE

DOM	VITRINITE		INERTINITE		LIPTINITE		TOTAL DOM	
	%	CUM %	%	CUM %	%	CUM %	%	CUM %
>10% (MAJOR)	2	2	0	0	0	0	2	2
>2% (ABUNDANT)	20	22	0	0	2	2	22	24
>0.5% (COMMON)	10	32	14	14	16	18	12	36
>0.1% (SPARSE)	14	46	30	44	14	32	16	52
APPROX. ABUNDANCE	1.67		0.26		0.36		2.29	
APPROX. % OF DOM	72.7		11.5		15.8		ABUNDANT	

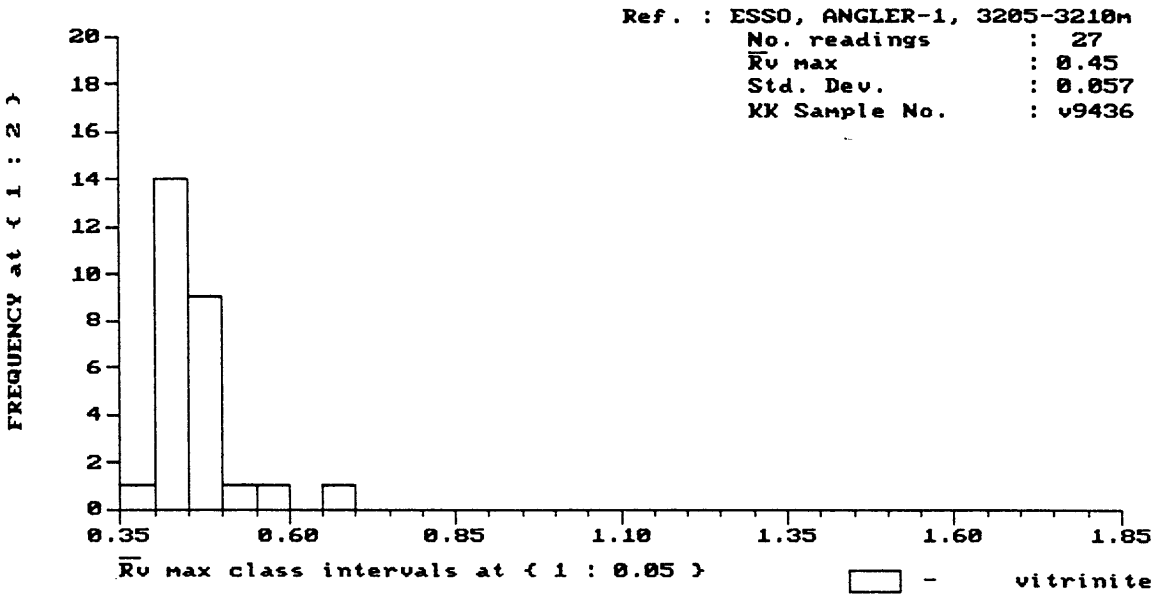
ROCK TYPES	SAND-STONE	SILT-STONE	CLAY-STONE	SHALY COAL	COAL	CARBONATE	OTHER (SPECIFY)
%	36	30	32	TR.	2	TR.	



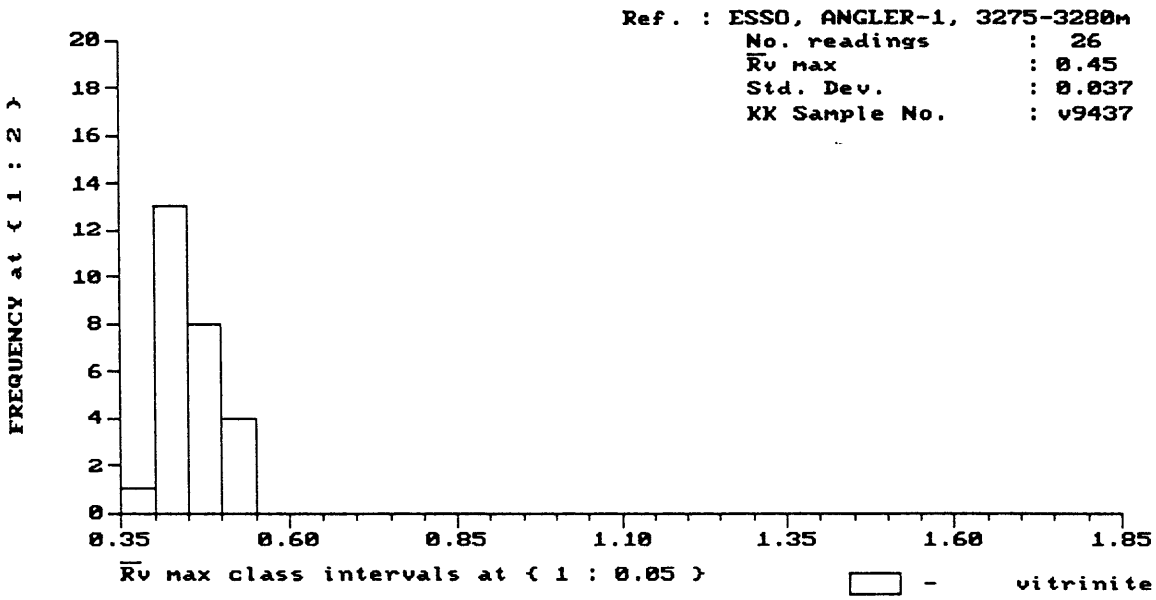
Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.



Keiraville Konsultants Pty. Ltd.

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70	1		1.00			1.30			1.60			1.90		
0.11			0.41	1		0.71	1		1.01			1.31			1.61			1.91		
0.12			0.42			0.72		FGV	1.02			1.32			1.62			1.92		
0.13			0.43	1		0.73	1		1.03			1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45	1		0.75			1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47	2		0.77			1.07			1.37			1.67			1.97		
0.18			0.48	1		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	2		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	2		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	2		0.81			1.11			1.41			1.71			2.01		
0.22			0.52	1		0.82			1.12			1.42			1.72			2.02		
0.23			0.53	3		0.83			1.13			1.43			1.73			2.03		
0.24			0.54	1	FGV	0.84			1.14			1.44			1.74			2.04		
0.25			0.55	2		0.85			1.15			1.45			1.75			2.05		
0.26			0.56	1		0.86			1.16			1.46			1.76			2.06		
0.27			0.57	2		0.87			1.17			1.47			1.77			2.07		
0.28			0.58	1		0.88			1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60	2		0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67	1		0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39			0.69	1		0.99			1.29			1.59			1.89			2.19		

VITRINITE		INERTINITE						LIPTINITE								OIL DROPS	BITUMEN
2.2%		0.1%						0.1%									
TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut	
								<0.1	<0.1	<0.1	<0.1	<0.1					

Sample Number...V9434..... Well Name...Esso; Angler-1..... Depth 3025-3030m Sample type...Cttgs.....

Date...19.../..05./.1994. Op. ....ME..... FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40			0.70			1.00			1.30			1.60			1.90		
0.11			0.41			0.71			1.01			1.31			1.61			1.91		
0.12			0.42			0.72			1.02			1.32			1.62			1.92		
0.13			0.43			0.73	1	↓	1.03			1.33			1.63			1.93		
0.14			0.44			0.74			1.04			1.34			1.64			1.94		
0.15			0.45			0.75			1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47	2	↑	0.77			1.07			1.37			1.67			1.97		
0.18			0.48	4		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	5		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	4		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	2		0.81			1.11			1.41			1.71			2.01		
0.22			0.52	1		0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83			1.13			1.43			1.73			2.03		
0.24			0.54	1		0.84			1.14			1.44			1.74			2.04		
0.25			0.55			0.85			1.15			1.45			1.75			2.05		
0.26			0.56	1	FGV	0.86			1.16			1.46			1.76			2.06		
0.27			0.57	3		0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59	1		0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90			1.20			1.50			1.80			2.10		
0.31			0.61	1		0.91			1.21			1.51			1.81			2.11		
0.32			0.62	1		0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68			0.98			1.28			1.58			1.88			2.18		
0.39			0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
28%	8%	2.0		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								0.5	0.2	1.0	0.2	0.1				

Sample Number V9435 Well Name Esso's Angler-1 Depth 3085-3090m Sample type cgs

Date 19/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40	2		0.70			1.00			1.30			1.60			1.90		
0.11			0.41	4		0.71			1.01			1.31			1.61			1.91		
0.12			0.42	3		0.72			1.02			1.32			1.62			1.92		
0.13			0.43	4		0.73			1.03			1.33			1.63			1.93		
0.14			0.44	1		0.74			1.04			1.34			1.64			1.94		
0.15			0.45	5	FGV	0.75			1.05			1.35			1.65			1.95		
0.16			0.46			0.76			1.06			1.36			1.66			1.96		
0.17			0.47	2		0.77			1.07			1.37			1.67			1.97		
0.18			0.48	1		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	1		0.79			1.09			1.39			1.69			1.99		
0.20			0.50			0.80			1.10			1.40			1.70			2.00		
0.21			0.51	1		0.81			1.11			1.41			1.71			2.01		
0.22			0.52			0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83			1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55	1		0.85			1.15			1.45			1.75			2.05		
0.26			0.56			0.86			1.16			1.46			1.76			2.06		
0.27			0.57			0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37			0.67			0.97			1.27			1.57			1.87			2.17		
0.38			0.68	1		0.98			1.28			1.58			1.88			2.18		
0.39	1		0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE	INERTINITE	LIPTINITE	OIL DROPS	BITUMEN
4.8%	0.6%	0.5%		

TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut
								0.1	0.2	<0.1	0.1	0.1				

Sample Number V9436 Well Name Esso; Angler-1 Depth 3205-3210m Sample type cfgs

Date 19/05/1994 Op. ME FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives

R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range	R	No Read	Pop Range
0.10			0.40	3		0.70			1.00			1.30			1.60			1.90		
0.11			0.41	3		0.71			1.01			1.31			1.61			1.91		
0.12			0.42	1		0.72			1.02			1.32			1.62			1.92		
0.13			0.43	2		0.73			1.03			1.33			1.63			1.93		
0.14			0.44	4		0.74			1.04			1.34			1.64			1.94		
0.15			0.45	2		0.75			1.05			1.35			1.65			1.95		
0.16			0.46	1	FGV	0.76			1.06			1.36			1.66			1.96		
0.17			0.47	2		0.77			1.07			1.37			1.67			1.97		
0.18			0.48	2		0.78			1.08			1.38			1.68			1.98		
0.19			0.49	1		0.79			1.09			1.39			1.69			1.99		
0.20			0.50	3		0.80			1.10			1.40			1.70			2.00		
0.21			0.51	1	↓	0.81			1.11			1.41			1.71			2.01		
0.22			0.52			0.82			1.12			1.42			1.72			2.02		
0.23			0.53			0.83			1.13			1.43			1.73			2.03		
0.24			0.54			0.84			1.14			1.44			1.74			2.04		
0.25			0.55			0.85			1.15			1.45			1.75			2.05		
0.26			0.56			0.86			1.16			1.46			1.76			2.06		
0.27			0.57			0.87			1.17			1.47			1.77			2.07		
0.28			0.58			0.88			1.18			1.48			1.78			2.08		
0.29			0.59			0.89			1.19			1.49			1.79			2.09		
0.30			0.60			0.90			1.20			1.50			1.80			2.10		
0.31			0.61			0.91			1.21			1.51			1.81			2.11		
0.32			0.62			0.92			1.22			1.52			1.82			2.12		
0.33			0.63			0.93			1.23			1.53			1.83			2.13		
0.34			0.64			0.94			1.24			1.54			1.84			2.14		
0.35			0.65			0.95			1.25			1.55			1.85			2.15		
0.36			0.66			0.96			1.26			1.56			1.86			2.16		
0.37	1	↑	0.67			0.97			1.27			1.57			1.87			2.17		
0.38		FGV	0.68			0.98			1.28			1.58			1.88			2.18		
0.39		1	0.69			0.99			1.29			1.59			1.89			2.19		

VITRINITE		INERTINITE						LIPTINITE								OIL DROPS	BITUMEN
3.5%		0.3%						0.5									
TV	DV	Sfus	Scler	Fus	Macr	ID	Micr	Spor	Cut	Sub	Res	Ld	Bituminite	Telalginite	Lamalginite	Oil cut	
								0.1	0.2		0.1	0.1					

Sample Number V9437 Well Name Esso; Angler-1 Depth 3275-3280m Sample type cttgs.

Date 20/05/1994 Op. MF FGV - First Generation Vitrinite, RV - Reworked Vitrinite, BTT - Bituminite, B - Bitumen, I - Inertinite, Cav - Cavings, DA - Drilling Mud Additives